PRACTICAL
WINERY
& VINEYARD

FEATURING
PROFESSIONAL SERVICES SHOWCASE

SEPTEMBER/OCTOBER 2010

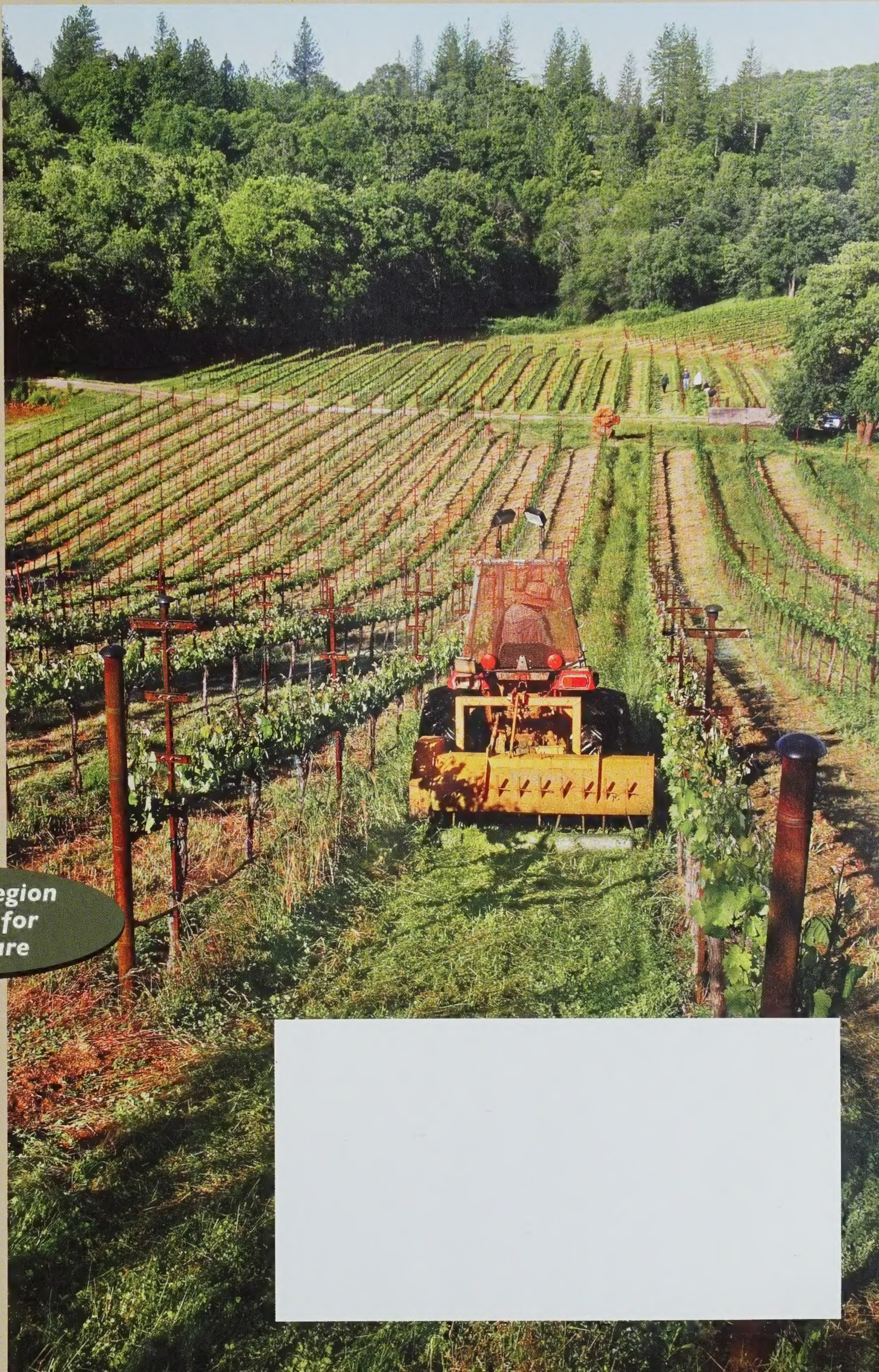
QDSA method for wine sensory analysis

Basics of wine distribution law

Monitoring fruit zone temperatures

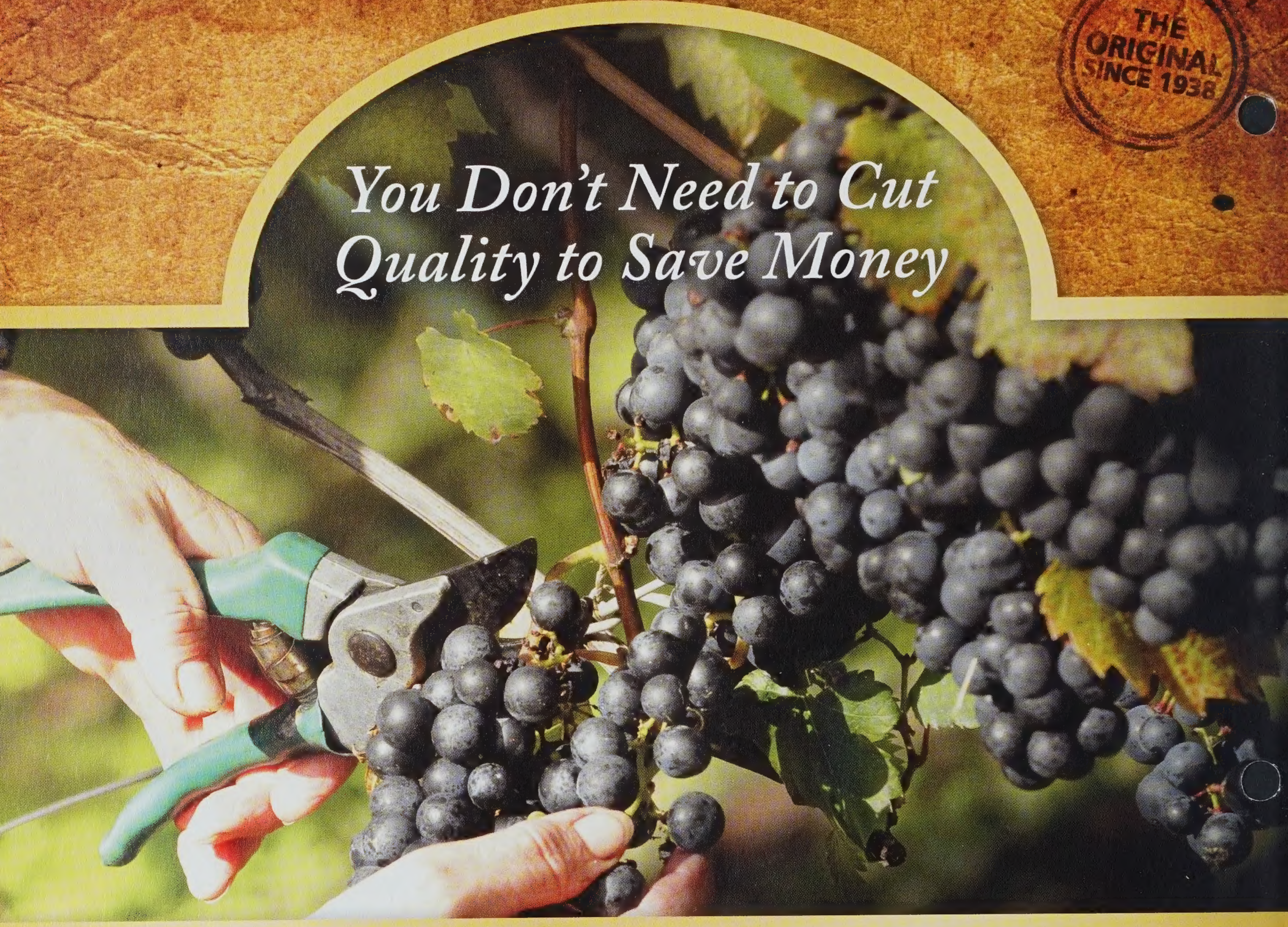
Outsourcing human resources

WINE MICROBIOLOGY
Variable wine microbe susceptibility



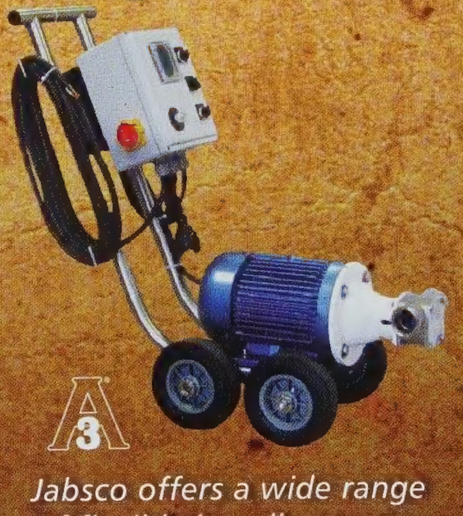
Amador region growing for the future

THE ORIGINAL SINCE 1938


You Don't Need to Cut Quality to Save Money

An affordable pump is the Jabsco advantage

Winemaking is a business where equipment costs can make a difference in profitability. Equipment downtime can create an even bigger impact on the bottom line. To maximize your return, you need a versatile pump that is affordable, easy to clean, and faster to service.


Jabsco offers a wide range of flexible impeller pumps

The Jabsco flexible impeller pump is designed to have fewer moving parts and is built with high-grade stainless steel and a hygienic rubber impeller. The pump is manufactured to 3A standards and can be cleaned in place or easily strip-cleaned.

An affordable pump with low maintenance costs — that's the Jabsco advantage.

GENTLE - VERSATILE - AFFORDABLE

JABSCO

Visit us online at www.jabsco-winepumps.com

Call us directly at 978.281.0440

facebook.com/jabscowine | *twitter.com/jabscowine*

ITT

WATER-BASED INKS

Care for the Environment is one of the priorities of Ramondín in the process of making bottle capsules.
Care for Nature is much more than a simple objective for Ramondín.
It is the only manufacturer in the world to develop water-based inks and technology for tin capsules.

RAMONDIN

791 Technology Way
NAPA · 94558, CA
Tel. 707 944 2277 · Fax 707 257 1408
ramondinusa@ramondinusa.com

www.ramondin.com

AT THE SERVICE OF OUR CUSTOMERS

PRACTICAL WINERY & VINEYARD

SEPTEMBER/OCTOBER 2010 • VOL. XXXI, NO. 3

PWV

EDITORIAL
ADVERTISING
CIRCULATION

58-D Paul Drive,
San Rafael, CA
94903
415/479-5819
www.practicalwinery.com

PUBLISHER/EDITOR
Don Neel

ASSOCIATE PUBLISHER
Tina Vierra

SENIOR EDITORS
Carol Caldwell-Ewart
Elinor Pravda

ART & PRODUCTION
MANAGER
Demitrius Handelih

CONTRIBUTING
EDITORS
Eleanor Heald
Ray Heald
James Kennedy
Glenn McGourty
Bruce Zoecklein

CONTRIBUTING
WRITERS
Millie Howie
Craig Root
Rachel Dumas Rey
Dr. Richard Smart
Robert Tracy

ADVERTISING
REPRESENTATIVES

WEST
Dana Johnson
707/433-1339

EAST / MIDWEST
Jim Oot
973/335-8902

PRACTICAL WINERY & VINEYARD (ISSN 9739-8077) is owned and published by PWV Inc. Published bi-monthly at subscription rate of $35/year domestic, Canada $45/year, and all other countries 55/year. Postmaster: send change of address to Practical Winery & Vineyard: P.O. Box 3629, San Rafael, CA 94912-9830. Back issues: $8 prepaid. Periodicals postage pending at San Rafael, CA and additional mailing offices. News media may use no more than $^1/_4$page of material per issue provided that PRACTICAL WINERY & VINEYARD is credited.

CONTENTS

METHOD FOR A COMMON LANGUAGE

7 **Quantitative Descriptive Sensory Analysis**
*By D. Granes, L Pic-Blayteron,
J. Negrel, and C. Bonnefond,
Institut Coopertif du Vin, Lattes, France*

15 **Basics of wine distribution law**
*By Marc Sorini, Will & Emery LLC
Washington, D.C.*

COVER STORY

18 **Amador – Classic Zinfandel region growing for the future**
By Linda Trotta

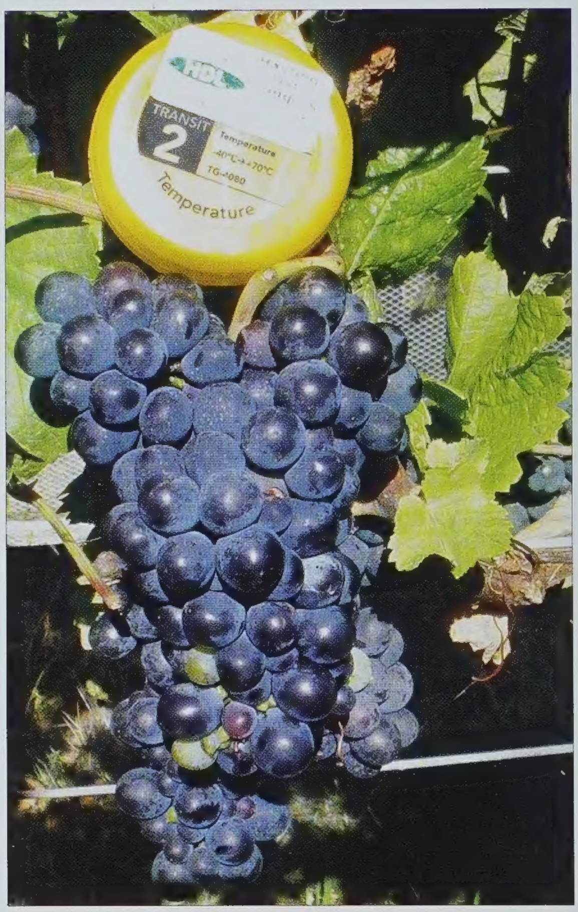
26 **Monitoring fruit zone temperatures for optimum grape and wine quality**
*By Erika Winter, Stephen Lowe, Nick Bulleid,
David Braybrook, and Matt Aldridge*

37 **Human resources: One less thing to worry about**
*By Milan P. Yager, President / CEO,
National Association of Employer Organizations*

LETTER TO THE EDITOR

45 **A simple solution to California water issues**
*By Charles Barra, Barra of Mendocino,
Mendocino County, CA*

46 **SUPPLIER SHOWCASE: PROFESSIONAL SERVICES**



26 Data loggers record cluster zone temperatures of Australian Pinot Noir.

DEPARTMENTS

41 **WINE MICROBIOLOGY**
Anti-microbial agents – Wine microbe susceptibility is variable
By Robert Tracy

READER SERVICES

6 **Publisher's Letter**
55 **Bookshelf**
58 **Advertiser Index**
58 **Calendar**

COVER: Mowing cover crop at Shake Ridge Vineyard, Amador County, CA. Photo by Art Toy.

"To stimulate continuing improvement in the wine industry."

Extend Shelf Life

Maintain Desired Bouquet, Color and Peak Flavor

COLD FACT

THE POWER OF LIQUID NITROGEN DOSING

No matter what your closure preference, just a drop of rapidly expanding low pressure liquid nitrogen keeps dissolved oxygen levels to a minimum. Either prefill inerting or headspace conditioning – dissolved oxygen is greatly reduced – allowing the product to be consumed with the flavor you intended.

Vacuum Barrier's complete line of NITRODOSE® liquid nitrogen injection systems remain frost-free and provide controlled dosing at all line speeds.

Extreme precision and accuracy saves downtime and allows you to get the most from your production lines.

VACUUM BARRIER VBC CORPORATION

4 Barten Lane, Woburn, MA 01801
Tel 1-781-933-3570 Fax 1-781-932-9428
email: sales@vacuumbarrier.com
www.vacuumbarrier.com

52 YEARS OF SERVICE

FROM THE PUBLISHER

PW PRACTICAL
Winery & Vineyard
JOURNAL

Practical Winery & Vineyard has, in its 30 years of publication, always felt it was performing the services of a "Journal" rather than just a "Magazine."

For the continuing education of the grape and wine industry, we have always straddled the educational line between university research, and the application of such research and other best practices in the winery/vineyard.

We decided to update our name accordingly. We hope you will welcome the ***Practical Winery & Vineyard Journal***!

In the best tradition of professional journals in fields as diverse as medicine, law, and engineering, ***Practical Winery & Vineyard Journal*** is moving to quarterly format in 2011.

PWV is committed to giving readers more quality content than ever, and will offer Winter, Spring, Summer, and Fall editions that follow the grapegrowing/winemaking year. Readers will have three months to review the in-depth, peer-reviewed, practical content in each edition.

The Winter 2011 edition of ***Practical Winery & Vineyard Journal*** will be published in January, 2011, and we hope to bring you our best issue ever. Read it over and tell us what you think!

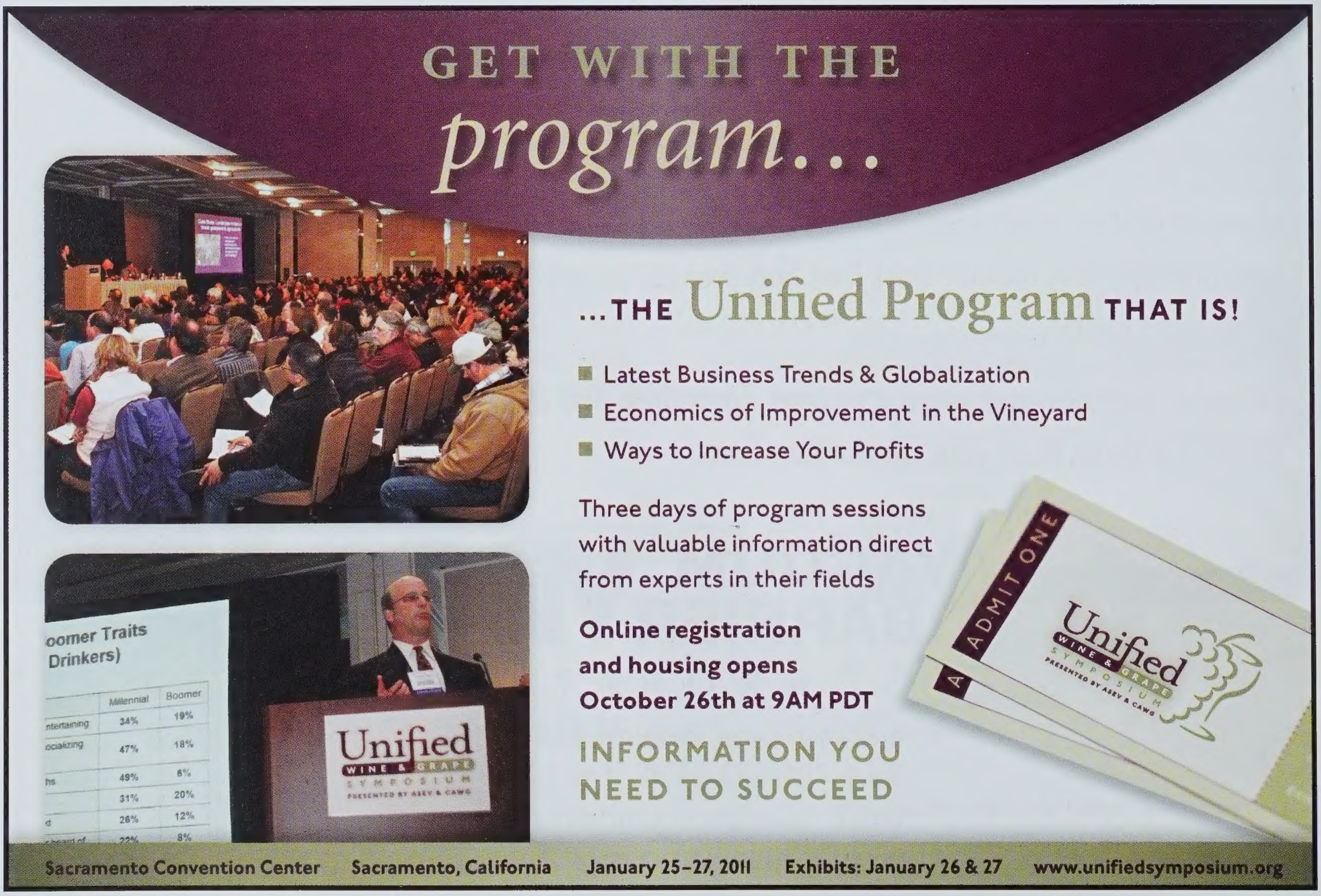
Reader comments, feedback, and critique are invaluable as we work to serve the continuing needs of the wine industry with the best quality content possible.

Your comments about our work – past, present, and future – can be sent to ***PWV*** anytime by emailing don@practicalwinery.com.

Sincerely,

Don Neel

Don Neel, Editor/Publisher
Practical Winery & Vineyard Journal


GET WITH THE
program...

...THE Unified Program THAT IS!

- Latest Business Trends & Globalization
- Economics of Improvement in the Vineyard
- Ways to Increase Your Profits

Three days of program sessions with valuable information direct from experts in their fields

Online registration and housing opens October 26th at 9AM PDT

INFORMATION YOU NEED TO SUCCEED

ADMIT ONE
Unified Wine & Grape Symposium
Presented by ASEV & CAWG

Sacramento Convention Center Sacramento, California January 25–27, 2011 Exhibits: January 26 & 27 www.unifiedsymposium.org

NO POSTAGE
NECESSARY
IF MAILED IN THE
UNITED STATES

BUSINESS REPLY MAIL

FIRST CLASS PERMIT NO.1715 SAN RAFAEL, CA

POSTAGE WILL BE PAID BY ADDRESSEE

PRACTICAL WINERY & VINEYARD
P.O. Box 3629
San Rafael, CA 94912-9830

SUBSCRIBE!

Don't miss an issue of the wine industry's most reliable,
informative, and practical publication!

PRACTICAL
WINERY
& VINEYARD

METHOD FOR A COMMON LANGUAGE

Quantitative Descriptive Sensory Analysis

**BY D. Granès,
L. Pic-Blateyron,
J. Negrel,
C. Bonnefond,
Institut Coopératif du Vin,
La Jasse de Maurin — Lattes, France**

Despite much research over the past 25 years, Quantitative Descriptive Sensory Analysis is used very little in the enology field.

Without examining the reasons for this situation, we will review the advantages of such a method as applied to enology, and to present a concrete case for the implementation of the QDSA method as carried out by the Institut Coopératif du Vin (ICV).

The basis for these reflections and research comes from the ISO 11035 Standard (Figure 1) which specifies the steps involved in building a sensory analysis tool.[1] QDSA is an analytical method with a goal to quantify the intensity of a list of sensations in order to describe a product (in our case, a wine). Each sensation that has to be quantified is connected to a descriptor and every descriptor is defined by a recipe.

Need for common language

Language can be described as a coding system that is useful only if understood unequivocally by all members of the group that utilizes it. Communication between people in the same winery or in the same division, or between people exercising the same types of function in different wineries, is effective only if the same words identify the same perceptions and vice-versa.

For QDSA, perceptions are limited to the sensory, and there is no need to work on abstract concepts. Inventing a new language would not be helpful because we already have one and every new language needs words, definitions, and time to create it. All that is needed is to choose among the existing terms in the current language those that will be useful for expressing perceptions clearly.

There are two main issues:

First, a vocabulary that is a choice of words to express a perception is arbitrary, but a choice must be made to avoid ambiguities. The method cannot allow too many descriptive terms or synonyms without risking oversights, errors, and uncertainties.

Second, translation of the perception. We do not mean translation from one language to another, but rather the translation of sensory perceptions as a whole (visual, tactile, olfactory, and taste perceptions) to the words that describe them. Beyond the quality and the precision of the initial choice of words, training is needed in order to implement the method.

Unlike wine tasting as it is most often practiced, Descriptive Sensory Analysis is not limited to linking words and their definitions, but adds a methodology for learning based on the reproducibility of the training exercises. The standards (or references) are established to serve as tools for training and evaluation.

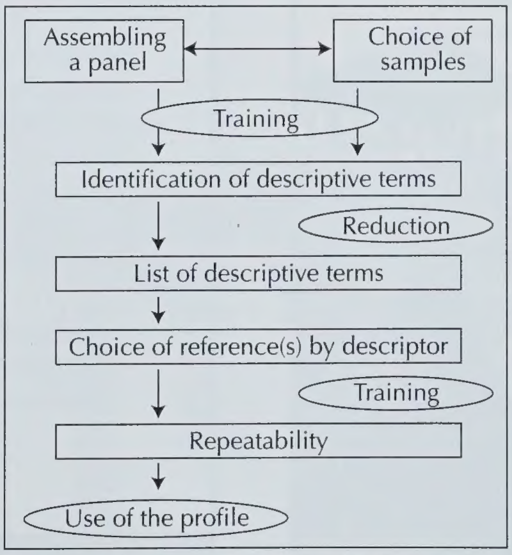

Assembling a panel
Choice of samples
Training
Identification of descriptive terms
Reduction
List of descriptive terms
Choice of reference(s) by descriptor
Training
Repeatability
Use of the profile

Figure 1: Stages in the ISO 11035 Standard.

The descriptor/attribute terms, their definitions, and the methods for sensory training must be established in the same sequence. Ideally, the training tools could be utilized in a different context, as evaluation tools for the combined mastery of perception and expression.

Two constraints

First constraint: Vocabulary

Hundreds of different terms could be used to describe the sensations perceived during the sensory analysis of a wine. However, despite the risks of confusion or of overlooking some sensations, it is useful to reduce the vocabulary, as the ISO standard anticipates, for at least three reasons:

- **Productivity of the learning phases** — Each descriptive term chosen must correspond to a standard (or reference) recipe, which must allow the user to appropriate the vocabulary, standardize it, and train with it. One can easily understand that the richer the vocabulary, the longer the research. This is true not only at the stage of creating the reference, but also for evaluators who will routinely utilize these recipes.
- **Efficiency of the evaluation** — If the QDSA of a wine is based on 15 descriptive terms, clearly it would go faster than if 30 terms had to be utilized. The winemaking world must also submit to the requirement of productivity. Fewer terms enhance the practicality of using QDSAs in the wine industry, in comparison to academic research.
- **Ease of communication** — The more the descriptive terms, the longer the discussions and the more difficult it is to reach a consensus. Sensory analysis is, most often, a task carried out by several people that allows them to make joint technical or commercial decisions, this is made easier through consensus.

Conversely, it is not desirable to reduce the number of terms selected too much. If the vocabulary is limited, it can no longer describe the object of the analysis, or it will deal with only a part of the reality. That is why there must be a compromise between the objectives of the sensory analysis and the constraints that are generated. Experience shows, but does not prove, that equilibrium is generally situated between 10 and 20 descriptive terms per QDSA. A human can experience sensory fatigue with a large number of sensations to evaluate.

Second constraint: Standard recipes (or references)

The standard recipes should be easy to reproduce, to let the greatest number of tasters train and evaluate themselves as often as possible. The better the language is mastered and shared, the more effective it is. It will help greater understanding of the obstacles and the issues, including evolution of the choices made by people in the wine industry.

There are two main "extreme" options:

- Recipes based on the wine molecules, alone or in combination, known to participate in the perception being studied. For example, tartaric acid or a tartaric acid/malic acid mixture are in the standard recipe for acidity.

Table I: Reference recipes for ICV standards

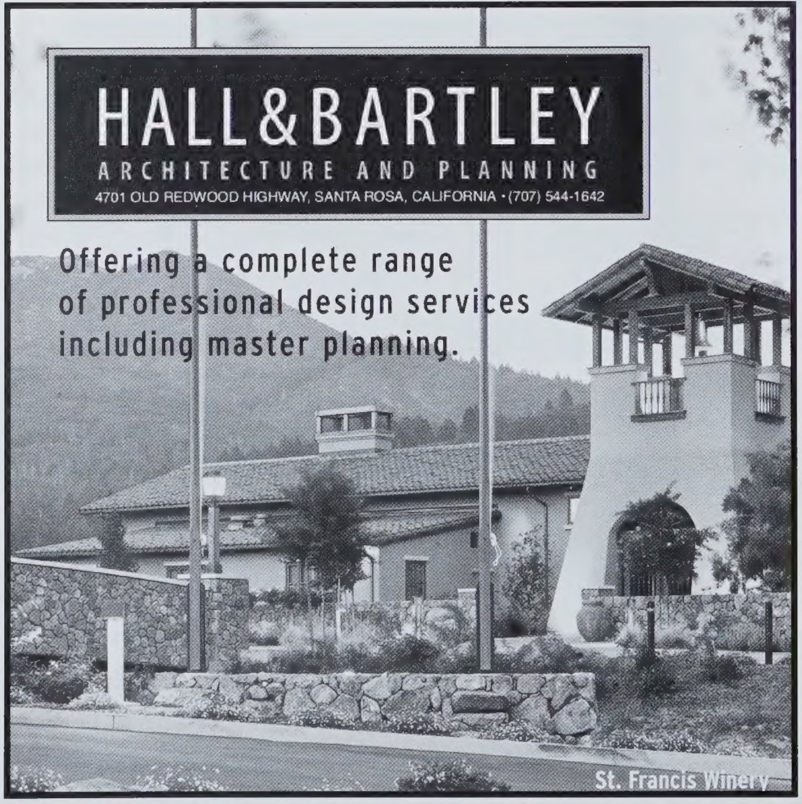
Descriptor	Recipe (mineral water — always the same brand)	Level corresponding to the ICV scoring scale
Mid-palate weight	Cellulose gum (CMC) with a high degree of polymerization — high viscosity, in solution of 1 g/L (prepared in a double boiler at 65° — dissolved with constant light stirring)	Maximum
Acidity	For red wine: tartric acid in a 0.6 g/L concentration For white or rosé wine: a mixture of 0.4 g/L tartric acid and 0.2 g/L malic	Maximum Middle of the scale
Roughness or tannic intensity	Aluminum salt — potassium dodecahydrate, concentration 1.2 g/L	Maximum
Astringency	Aluminum salt — potassium dodecahydrate, concentration 1.2 g/L	Maximum
Dryness	White food-grade ground chalk solution, at 50 g/L	Maximum
Bitterness	Anhydrous caffeine at 0.3 g/L	Maximum

This option has the advantage of the recipes being reproducible as long as the products utilized are perfectly purified or always have the identical composition. It is what the ICV has chosen for the majority of the standard (or reference) recipes for taste perceptions. However, these products are not always conveniently accessible, especially rare or expensive products. Those that are accessible may not be very stable over time. Stability is often a problem with aromatic molecules.

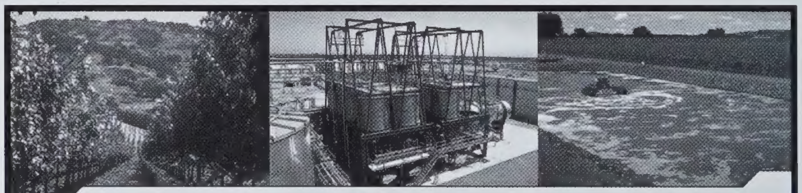
- Recipes based on everyday products are available almost everywhere. For example, a simple burnt match extinguished in water is used in the recipe for the "Sulfur off — Burnt Match" standard. The advantage of this method is the ease of making the recipes.

A scale and a graduated test tube are usually all the equipment needed. The ICV chose this system for the majority of the standard (or reference) recipes for olfactory (aroma) perceptions. There is a disadvantage due to the risk of poor reproducibility, which is often the case with sensory sensations.

Initial testing of several recipes follows the method presented in the standard and must lead to a consensus. Starting with the initial terms,


HALL&BARTLEY
ARCHITECTURE AND PLANNING
4701 OLD REDWOOD HIGHWAY, SANTA ROSA, CALIFORNIA • (707) 544-1642

Offering a complete range of professional design services including master planning.


The wine industry has trusted Kennedy/Jenks Consultants for professional environmental engineering services since the 1950's. We specialize in providing cost-saving, sustainable solutions to meet winery needs.

e: Bob Chrobak@KennedyJenks.com
t: 415.243.2150
www.KennedyJenks.com/wine

Our services include:
- Wastewater
- Water Supply
- Storm Water
- Solid Waste
- Facility Planning
- Design
- Construction Management
- Hazardous Materials
- Air Emissions and Odors
- Regulatory Compliance Support
- Land-Use Permitting/CEQA

Kennedy/Jenks Consultants
Engineers & Scientists

Table II: Recipes for standards common to white, red and rosé wines

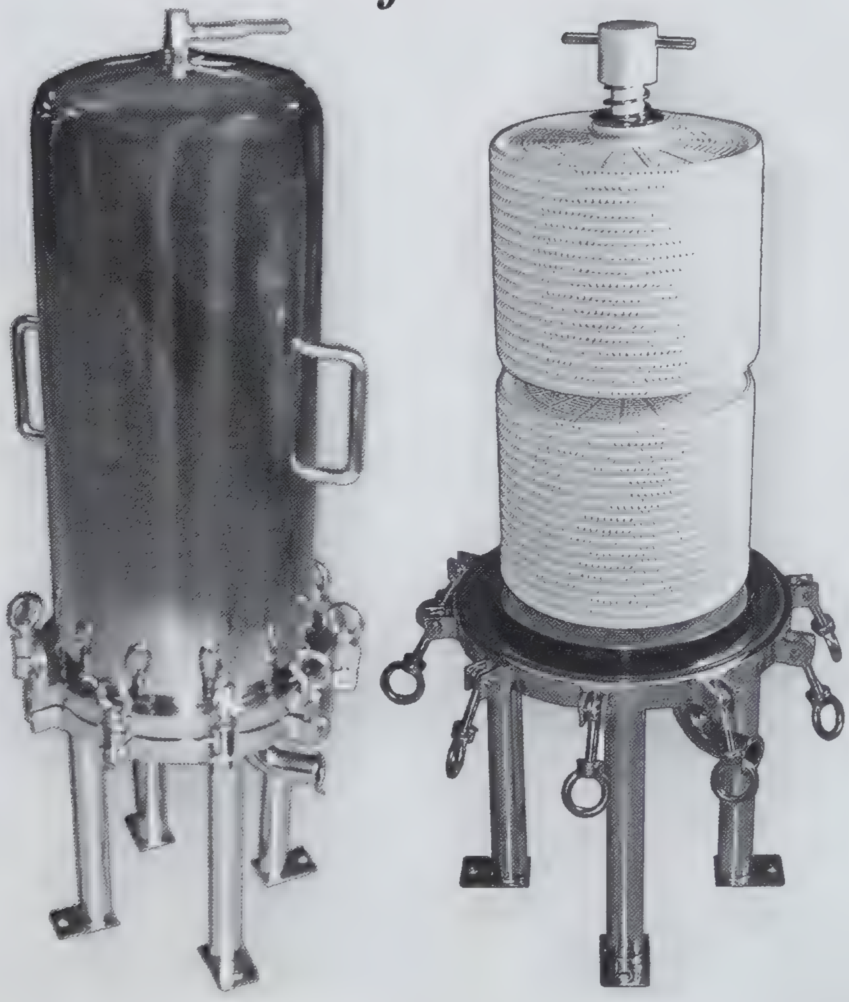
Descriptor	Recipe (mineral water — always the same brand)	Specificity
Sulphur off burnt match	Light a match and extinguish immediately in 25 mL water	Preparation with no waiting time
Leek-like sulphur-off	10 g frozen cauliflower florets 2 g fresh leek 100 mL water	Preparation with no waiting time
Chemical	2 µ L isoamyl acetate in 1 L water	One hour before
Sap	3 g fresh Maestro® wood chips, French oak 0.5 g Maestro® Allegro® wood chips (burnt), from France 1 g fresh Maestro® sawdust 25 mL water	One hour before
Toasted	4 g Maestro® Allegro® wood chips (high toasting), French oak 1 whole roasted coffee bean	One hour before
Vanilla	1 g Maestro® Allegro® wood chips (high toasting), French oak 1 mL natural vanilla liquid extract, Vahiné® brand	One hour before

the panel applying the method must identify the descriptive term that corresponds to each of the references and be able to reproduce this identification.

Simultaneously with this validation of one or more recipes, and with their future utilization for training and evaluation in mind, it is useful to test the impact of the following actions:

- **Dilution** — Based on different recipes that might represent the standard, select one that allows tasters to identify the descriptive term at low levels of concentration and with a similar quantified response from all tasters. If the dilution does not work, it is more difficult to train the tasters to correctly utilize a quantified marking scale, and this could result in them conducting a Descriptive Sensory Analysis (DSA) instead of a QDSA. Dilutions allow for high, medium, and low intensity scales, as the scale is used to quantify individual attributes. This is different than simply stating an attribute is or is not present in a wine.
- **Blending with wine** — If the perceptions that change with the addition of the recipe ingredients to a uniform reference wine are those that correspond to the standard, the reference will be particularly interesting. This is the equivalent of measured additions as an element of validation in chemical analyses.
- **Combinations with each other** — If the combination of several references leads to the expression by each taster of the descriptive terms attached to each of the references, there is an im-

The Choice for Lenticular Filter Housings is Clear



√ 316 stainless steel, sanitary construction, electro polished.
√ Equipped with sanitary pressure gauge, two butterfly valves, fittings, vent valve & drain.
√ An enclosed modular filter sheet system, sanitary, easy to use, with extremely low product loss.

12" Lenticular Filter Housing 2 modules	$3295.00
12" Lenticular Filter Housing 3 modules	$3695.00
12" Lenticular Filter Housing 4 modules	$3995.00
16" Lenticular Filter Housing 2 modules	$4095.00
16" Lenticular Filter Housing 3 modules	$4595.00
16" Lenticular Filter Housing 4 modules	$4995.00

GW KENT
www.gwkent.com
1.800.333.4288

portant opportunity to create training and evaluation exercises.

Table III: Recipes for standards specific to white wines		
Descriptor	**Recipe (mineral water — always the same brand)**	**Specificity**
Citrus	1/4 of a slice of lemon, 0.5 cm thick 10 mL of the juice in a can of grapefruit sections in syrup 30 mL water	One hour before
Exotic fruit	1 mL grapefruit syrup 1 mL pinapple syrup 50 mL water	One hour before
Fruit in syrup or white fruit	5 mL of the juice in a can of apricots in syrup 4 mL of the juice in a can of pears in syrup 5 mL of the juice in a can of peaches in syrup 30 mL water	One hour before
Candied fruit	5 g candied fruit (choose all colours) 10 mL water	One hour before

Example of methodology to create standard recipes for references

For the past three years, the ICV has been working to find a standard (or reference) recipe for the descriptive term of the "mid-palate weight" sensation first defined by the internal panel as "the sensation of filling the mouth with a standardized quantity of wine (10 milliliters).[4] This is the first descriptor to quantify after putting the wine in the mouth.

Take one sip and do not move the wine with the tongue or by sucking in air. Keep the head straight, do not move the tongue. Evaluate (perception) and note (expression) the intensity of the tactile pressure of the wine on the lingual (tongue), sublingual (palate), labial (internal part of the lips), and jugal mucosa (internal part of the cheeks) within three seconds after putting the wine in the mouth."

This standard and its definition do not provide an ideal recipe that could work for generating that defined sensation. In order to define a recipe that corresponds to the definition, the method called "Design of Experiment" (DoE) is very useful.[2,3,5] This is a factorial method that allows the researcher to:

- reduce the number of trials;
- measure which parameters are the most important (key factors);
- determine the interactions among the parameters;
- increase the precision of the results; and
- create a mathematical model of the experiment.

The ICV chose different elements to create a standardized reference for "mid-palate weight": ethanol, glycerol, gum arabic, sugar, and carboxymethyl cellulose (cellulose gum or CMC, in the form utilized as a thickener in agri-food industries) were tested.

The responses of the panel to several combinations of these factors are noted individually on a scale from 1 to 4. Each taster attributes the score 1 or 2 or 3 or 4 to each of the combinations tested in a blind tasting, while following the procedure presented above. Through their responses, the key factors and their interactions are identified.

By designing successive experiments, we gradually approach a recipe that best represents the sensations listed and described in the definition of "Mid-palate weight." In this case, pure CMC gave the best results. This emphasizes the importance of choosing the initial ingredients. For example, if we had not considered CMC, we would have ended up with a different recipe from the one retained, potentially almost as valid.

After the recipe has been created, the repeatability and reproducibility of the panel's results regarding the link

Talk is Cheap.
Quality Control
Costs Real Money.

St.Patrick's of Texas

Sanitary Valves and Fittings

St. Patrick's X-Ray Fluorescence Analyzer for bulk stainless steel analysis pre-production, QC during production, and QA post-production.This instrument is part of St. Pat's Analytical Services.Price tag: $35,000. This is one of the instruments we rely on, so you can rely on the quality of St. Patrick's Sanitary Valves and Fittings.

St. Patrick's of Texas • StPats.com • 512-989-9727

Table IV: Recipes for standards specific to rosé wines

Descriptor	Recipe (mineral water — always the same brand)	Specificity
Yeast	0.25 g active dry yeast (always the same) 150 mL water	One hour before
Apricot	1 piece of canned apricot in syrup 1 dried apricot 50 mL water	One hour before
Blackcurrant	8 mL crème de cassis syrup 6 mL blackcurrant coulis (fruit purée) 100 mL water	One hour before

between the reference and the sensation identified must be validated.

ICV standards and reference recipes

The definitions of the ICV's taste standards have changed little since 1994:

- To the "mid-palate weight" descriptor, at the end of the first sentence, "The sensation of filling the buccal cavity with a standardized quantity of wine (10 milliliters)," was added "as defined by a solution of cellulose gum."
- The "Acid" descriptor is now defined as "The acid sensation as defined by a solution of tartaric acid (for red wines) or by a mixture of solutions of tartaric and malic acids (for white or rosé wines) in water." The rest of the definition remains unchanged.
- The "Roughness" descriptor was extended to rosé wines with the same definition as for white wines. The recipes in Table I are currently utilized and can be prepared the day before.

Taking into account the aromatic characteristics of still, dry wines according to the color (red, rosé or white), the ICV designed three lists of aromatic standards, each corresponding to a color of wine. This is especially important as a change in the medium can create an aromatic change (hence changing the desired perception). Some standards are shared among the lists. Tables II, III, IV, and V show the recipes that correspond to the maximum levels on the ICV intensity scale.

Design of a training program

In order to become familiar with the QDSA method and the various descriptors, working sessions are offered to those preparing to be on a tasting panel. This training lets panel members learn the olfactory and taste descriptors, and become familiar with utilizing the scales.

EXPERTISE THROUGH EXPERIENCE

HOYT SHEPSTON, INC.

Customhouse Brokers

Ocean & Air
International
Freight Forwarders
Serving your
Import – Export Needs

161-A Starlite Street
San Francisco, CA 94080
T 650-952-6930
F 650-952-5691
wine@hoyt-shepston.com

Trusted and Strategic Advisers

TURRENTINE BROKERAGE

- Fast response to clients needs
- Unmatched expertise in long-term contracts
- Reputation for integrity from 37 years of service
- Over $1.5 billion in grape and wine sales in the last 10 years
- Proven long-term strategies from exclusive and superior market information and research
- Publishers of *The Turrentine Outlook: Strategies & Forecasts for a Strategic Advantage*

Michael Robichaud, Larry Kavanagh, Steve Robertson,
Erica Moyer, Bill Turrentine, Steve Fredricks,
Stephens Moody, Brian Clements, Matt Turrentine

Grapes • wines in bulk • global sourcing • casegoods
processing • strategic planning

www.turrentinebrokerage.com 415.209.9463

Table V: Recipes for standards specific to red wines

Descriptor	Recipe (mineral water — always the same brand)	Specificity
Vegetal or herbaceous	25 mL fresh bell pepper solution (at 50 g/L) 25 mL frozen green bean solution (at 60 g/L)	The basic solutions are prepared the day before. The mixture is prepared with no waiting time.
Berry or red fruit	4 g frozen raspberries, crushed 1 g blackcurrant coulis (fruit purée) 4 g frozen blueberries, crushed 10 mL water	Preparation with no waiting time.
Jammy	21 g sour cherry jam 12 g plum jam 1 g strawberry jam	All jams are the same brand. Preparation with no waiting time.
Prune	1 dried prune	Preparation with no waiting time.
Black pepper	6 black peppercorns 25 mL water	One hour before

Training must be repeated every year to maintain the high performance of the panel members. Several types of exercises can serve as the basic training program.[6] Variations can be developed to evaluate the performance of the panel members.

a) Presentation of the olfactory and taste standards — Each standard is presented to the panel members, who are introduced to the olfactory and taste sensations associated with each descriptor. For the taste standards, the evaluation procedure for the sensations in the mouth for each flavor is shown/repeated when each solution is presented.

b) Blind identification of the olfactory and taste standards — In order to help panel members remember the standards that have just been presented to them, a series of NON-identified samples containing an aroma (or flavor) added to water are offered. Each panel member must smell (or taste) the sample and identify the descriptor that has been added. At the end of the exercise, samples are revealed and presented once again, so that the tasters can continue to work on descriptors that gave them trouble.

When the training is advanced and the tasters begin to know the standards, the exercise can be made more complex by preparing samples with a concentration different from the standard, by working with a wine instead of water, or by making mixtures of aromas or flavors, in water or wine.

COMPLETE CRUSHPAD SYSTEMS

LT™ & LT™ 2+2 (MOG Separators)
Fruit Receiving Systems
Bin Dumpers
Sorting Tables
Belt Conveyors
Screw Conveyors
Vibratory Conveyors
SUTTER Presses
ME Destemmers & Peristaltic Pumps
DEMOISY Destemmers, Mohno Pumps & Crush Rollers

USED BY THE FINEST WINERIES TO ACHIEVE THE BEST RESULTS
Call Now to Schedule Design Appointments!

1650 Almar Parkway
Santa Rosa, California 95403
P 707 573 3141 • F 707 573 3140
www.pnlspecialties.com
CA Contractor's #803431, OR Contractor's #180330
WA Contractor's #PLSPELS923BZ

P&L SPECIALTIES
MANUFACTURING THE FINEST STAINLESS STEEL EQUIPMENT
SOLUTIONS • EXPERTISE • QUALITY • SATISFACTION

PENNSTATE
1855 University Park

Extension Associate, Enology

The College of Agricultural Sciences is seeking an energetic individual with exceptional organizational skills to provide leadership for the applied enology research and educational programs to support winery operators in Pennsylvania, with primary responsibility to provide educational programs on quality control in wine making. The individual will work closely with research faculty in our Food Sciences and Horticulture departments on issues related to wine quality. Commercial winemakers and their employees will be the primary audience served and it will be the responsibility of this individual to assist the industry in improving overall wine quality. Requires Master's degree in enology, food science or bio-chemistry, plus two years of effective experience. PhD is preferred. However, other degrees, education and related work experience will be considered. Experience in wine education and commercial winemaking is required. The candidate must demonstrate effective teamwork skills, communication skills, teaching and program development skills, and be willing to travel extensively through the state. The candidate must be self-motivated and able to provide leadership to the wine industry. Candidate must have a valid driver's license. The closing date for accepting applications is September 30, 2010. Visit www.psu.jobs for details and to apply (Job #: H-32333).

Penn State is committed to affirmative action, equal opportunity and the diversity of its workforce.

Opportunities as **limitless** as **Penn State**.
www.psu.jobs

c) Classifying olfactory and taste standards — The purpose of this type of exercise is to train the panel to evaluate the various levels of intensity of a descriptor to better develop the use of an intensity scale for each descriptor. This is one value of QDSA. The tasters are given a series of samples containing the same aroma (or flavor), which have been prepared at different concentrations in water. They are told the identity of the aroma (or flavor), and they must rank the samples from weakest to strongest.

At the end of the exercise, the concentrations are revealed and the samples are presented once again, so the tasters can continue to work on descriptors that gave them trouble. Initially, the samples are prepared in water, with very different concentrations. Then, to improve the panel's performance, the exercises could be presented with the concentration levels closest to each other and/or with mixtures prepared with a wine.

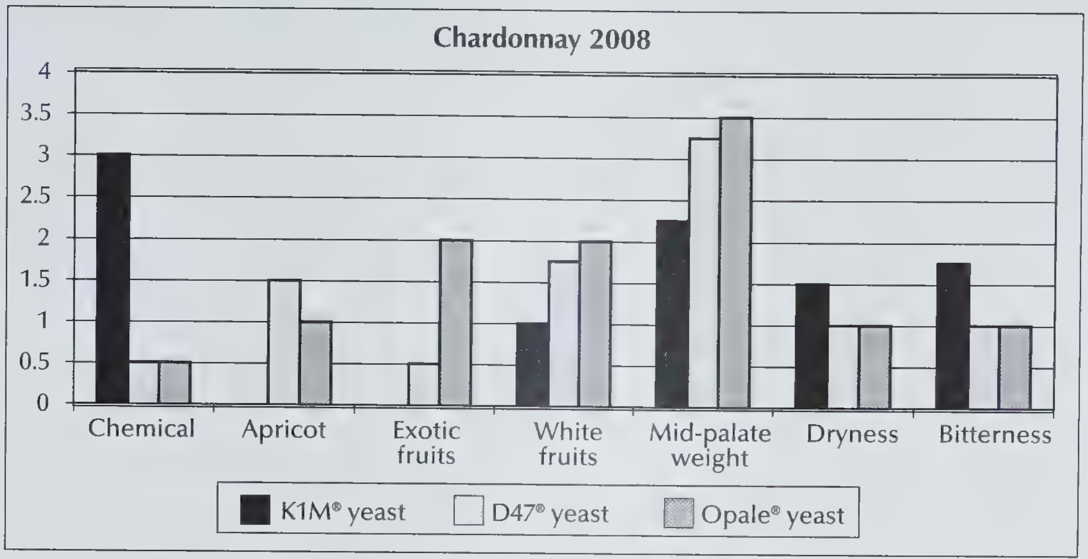
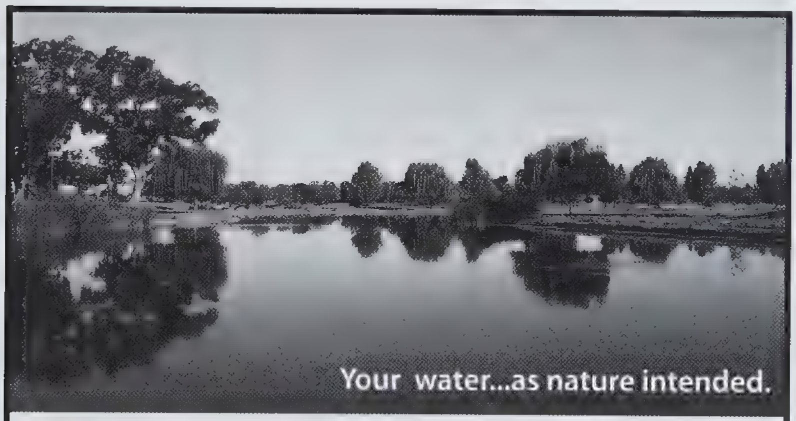


Figure 2: Characterization of a yeast trial by QDSA (ICV, R&D 2008)

d) Thresholds for detection and identification of olfactory and taste standards — This type of exercise ascertains whether certain members of a given group of experts are more or less sensitive to a flavor or aroma. This enables the training to be personalized for certain tasters who

Continued on page 34



Let EP Aeration help you with all of your Wastewater & Reservoir Treatment needs!

Wastewater Treatment Systems Featuring:
- No odors
- No sludge
- Low energy
- Guaranteed results

Reservoir Treatment Systems Featuring:
- Reduced algae
- Reduced metals
- Reduced evaporation
- Enhanced ecosystems

EP AERATION

THE LEADER IN SUB-SURFACE AERATION
AND WATER QUALITY MANAGEMENT

Contact us today for a free quote.
Call (800) 556-9251 or visit www.epaeration.com

NAPA FERMENTATION SUPPLIES

SERVES YOUR YEAST NEEDS

LAFFORT

Now available, Laffort's new Zymaflore FX10® specifically for Bordeaux varieties. It is extremely robust in fermentation, and very neutral aromatically, for fruit expression.

Also, Zymaflore X16, X5, and VL3 for white wines.

LALLEMAND

Yeast from the Enoferm and Lalvin series are available. Choose from 11 Enoferm or 25 Lalvin yeasts.

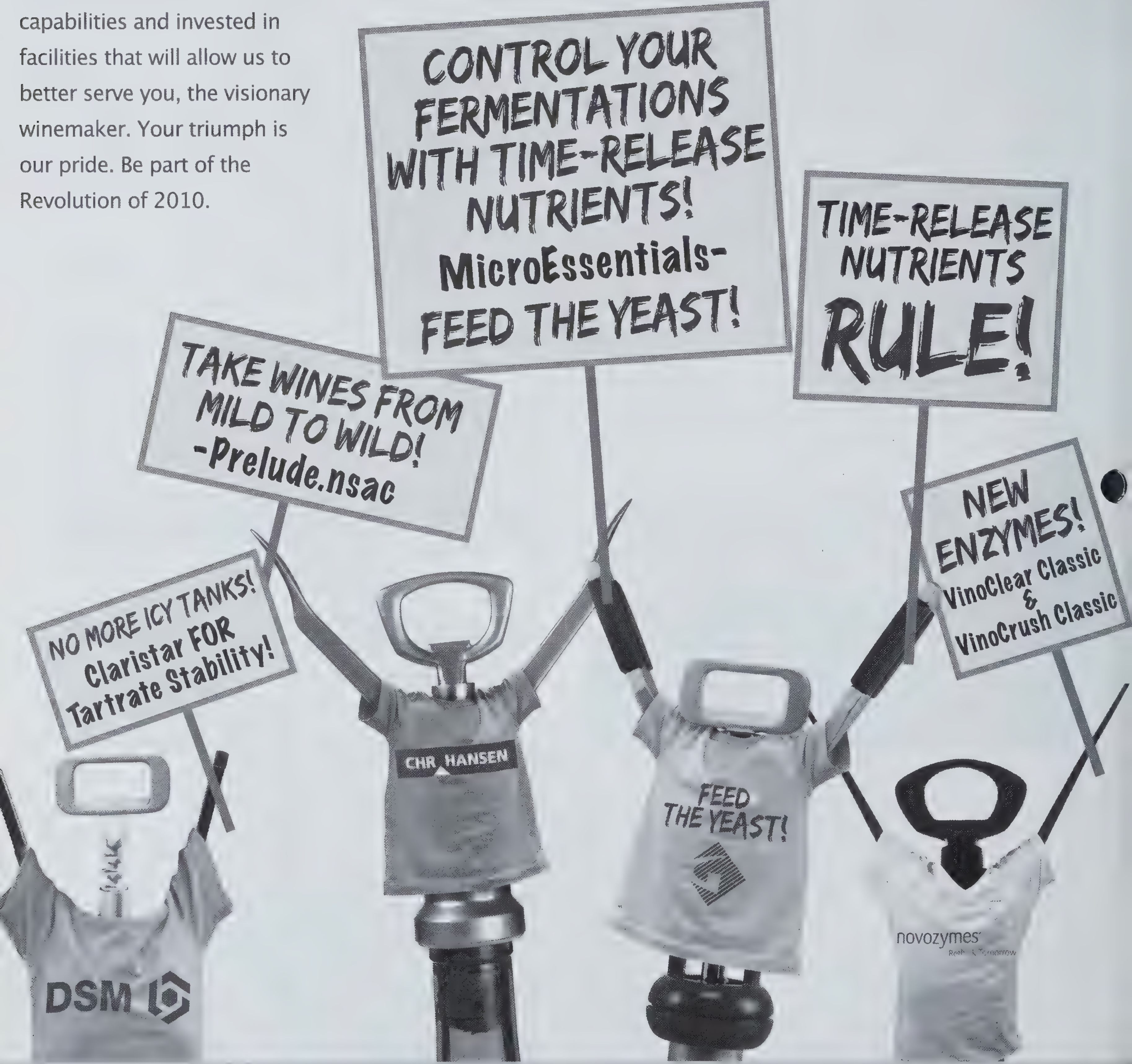
Lalvin ICV OPALE® is the latest enological yeast selection from the Institut Coopératif du Vin (ICV) for higher aromatic intensity in white and rosé wines.

Contact us today!

575 Third St., Bldg. A, Napa, CA 94559
Tel: (707) 255-6372; Fax: (707) 255-6462
www.napafermentation.com; wineyes@aol.com

THE REVOLUTIONARIES BEHIND WINE'S VISIONARIES

From new advances in yeast and enzyme technology to new nutrient formulations, Gusmer brings you the latest revolutionary products. In 2010 we've expanded our R&D capabilities and invested in facilities that will allow us to better serve you, the visionary winemaker. Your triumph is our pride. Be part of the Revolution of 2010.


CONTROL YOUR FERMENTATIONS WITH TIME-RELEASE NUTRIENTS! MicroEssentials- FEED THE YEAST!
TIME-RELEASE NUTRIENTS RULE!
TAKE WINES FROM MILD TO WILD! -Prelude.nsac
NEW ENZYMES! VinoClear Classic & VinoCrush Classic
NO MORE ICY TANKS! Claristar FOR Tartrate Stability!
CHR HANSEN
FEED THE YEAST!
novozymes
DSM

Gusmer Enterprises, Inc.®

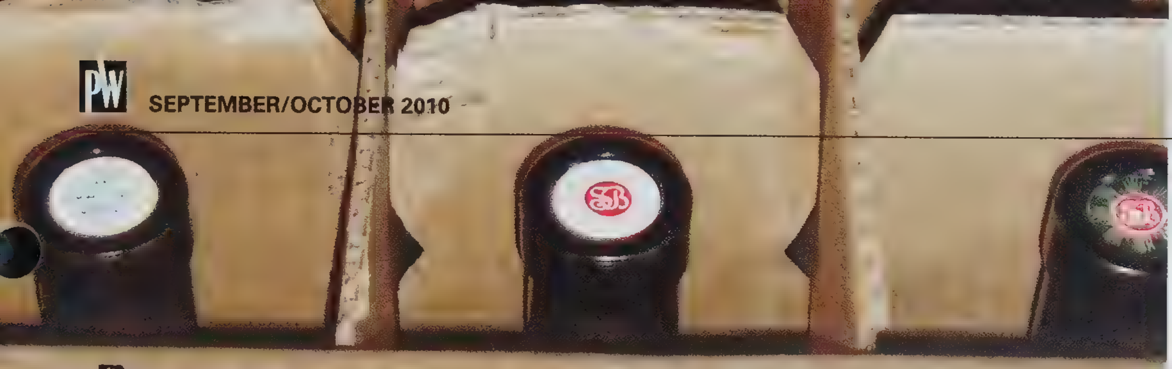
www.gusmerenterprises.com

West Coast:
81 M Street
Fresno, CA 93721
Tel: 559.485.2692
Fax: 559.485.4254

The Wine Lab®:
640-D Airpark Road
Napa, CA 94558
Tel: 707.224.7903
Fax: 707.255.2019

East Coast:
1165 Globe Avenue
Mountainside, NJ 07092
Tel: 908.301.1811
Fax: 908.301.1812

Midwest:
1401 Ware Street
Waupaca, WI 54981
Tel: 715.258.5525
Fax: 715.258.8488



Basics of Wine Distribution Law

BY Marc Sorini
McDermott Will & Emery LLC
Washington, DC

Recent legal struggles over direct shipping of wine to consumers and the subsequent opening of many states to direct-to-consumer shipment has not altered the fact that the vast majority of wine consumed in the U.S. passes through the three-tier distribution system.

Accordingly, understanding the legal fundamentals of this "conventional" wine distribution system is a must for any winery, large or small, hoping to become more than a niche player in the U.S. market.

Variations in state distribution systems

Before entering into a relationship with a broker or wholesaler to serve a particular market, a winery should conduct due diligence about that market. An important component of that due diligence is examining the legal framework of the state's distribution system.

So-called "control" states establish a government monopoly for the wholesale distribution and sale of wine. In addition, some control states also feature "state stores" as the exclusive off-premises retail channel for wine. The map identifies the control states for the distribution of grape table wine (12% alcohol by volume). Maryland presents a special case as it is a control jurisdiction for wine in a single county — the wealthy Washington, D.C. suburb of Montgomery County.

Control states permit wineries to sell directly to the state. Nevertheless, virtually all wineries appoint brokers to assist them in serving control state markets. Control state brokers often are affiliated with large wine wholesalers like Southern Wine & Spirits, Republic National Distributing Company, and Young's Market. Brokers can assist with listing the wine with control state authorities, help market the brand in the state, and perform many promotional functions handled by wholesalers in other states.

In non-control or so-called "open" or "license" states, wineries from outside the state generally must sell to an in-state wholesaler. The wholesaler, in turn, sells the wine to retailers (hence the "three-tier system" of supplier [winery], wholesaler, and retailer).

A small number of states permit direct-to-retailer sales by out-of-state wineries, often as a way to preserve in-state self-distribution privileges without overt discrimination subject to a Commerce Clause Challenge.

As a practical matter, however, most wineries determine that the only way to reach a meaningful number of retailers outside their immediate vicinity is through wholesalers.

Implications of wine franchise laws

Several legal distinctions significantly impact how a winery should approach wholesalers in the open states. The most important distinction separates "franchise" from "non-franchise" states. These terms do not refer to general franchise laws that protect franchisees like McDonald's restaurants from arbitrary termination by franchisors.

Such general franchise laws usually apply only where the relationship involves payment of a "franchise fee" or the existence of a "community of interest" between the franchisor and franchisee, elements rarely present in the usual winery-wholesaler relationship. (Wisconsin, however, has a general dealership statute that may apply to relations between Wisconsin wholesalers and relatively large wine suppliers.)

In the wine industry, a "franchise state" generally refers to a state whose law includes specific statutes or regulations that significantly limit the ability of a wine supplier to terminate or refuse to renew its relationship with a wholesaler.

Defining exactly what constitutes a "franchise" jurisdiction involves some measure of line drawing (this chart lists Maryland as a non-franchise state even though a state regulation requires wineries to provide wholesalers with at least 30-day notice prior to termination). Nevertheless, the general consensus counts 22 wine franchise states.

Stated in simplified terms, wine franchise laws usually restrict the ability of a winery to terminate or not renew a wholesaler agreement to "good cause" or "just cause." "Cause" usually is defined or interpreted by the courts as a deficiency in performance. Notably, a winery's unilateral business needs do not constitute "cause" in most places.

Prior to a termination for all but the most serious grounds, wine franchise laws generally require the winery to provide written notice prior to termination (most commonly 60 to 90 days) and give the wholesaler an opportunity to "cure" the deficiencies that justify termination. Immediate termination usually is restricted to the most serious of wholesaler deficiencies, such as bankruptcy, fraud, or conviction of a crime.

Wine franchise laws also may limit a winery's ability to object to changes in a wholesaler's ownership or management, or a sale or assignment of the wholesaler's brand distribution rights to another party.

In most cases, winery objections must be "reasonable," and the law may discount objections if the proposed new owner(s) or other transferee(s) meet the criteria required by the winery of its other wholesalers.

Conversely, wine franchise laws may also apply to successor-owners and/or importers of a brand of wine. In such states, even a complete change in the entity selling a particular brand of wine into the state does not allow a change in the brand's distribution in the absence of "cause."

Perhaps most important, wine franchise laws usually do not permit any waiver of the laws' protections via contract, written or otherwise. Moreover, these laws usually place the burden on the winery to justify any termination.

Finally, in some states local regulatory bodies decide whether a winery possesses "cause" to terminate a wholesaler. Many of these local authorities have a reputation for favoring [local and usually politically-connected] wholesalers in termination disputes. In the remaining franchise states, wholesalers can go to court to challenge a termination under the franchise law.

Courts usually are empowered to award monetary damages to compensate wholesalers for a wrongful termination of their rights, and generally can order "injunctive relief" that may temporarily or even permanently stop a termination.

Injunctive relief may be hard to obtain against a small winery, however, because the wholesaler usually will have trouble showing the kind of "irreparable harm" required to justify an injunction.

Franchise laws make it very difficult and potentially costly to terminate a wholesaler in a franchise state. As a result, in franchise states, wholesalers are accustomed to buying, selling, and swapping wine brand distribution rights. This practice provides a non-contentious way to change wholesalers **if** the wholesaler is willing to contemplate a swap or a sale at a realistic price.

Franchise laws also heighten the need for winery due diligence **before** appointing or even selling to a wholesaler in a franchise state. In effect, the appointing winery should look at wholesaler appointments in franchise states as a potentially permanent "marriage" in the territory. Wineries accordingly should proceed with caution and do their best to ensure that a particular wholesaler in a franchise market is the right one.

Termination rules in non-franchise states

Termination of wholesalers in non-franchise "open" states generally presents fewer obstacles. Absent unusual circumstances or an agreement that limits the winery's ability to terminate a wholesaler, the general rule allows a winery to terminate after a "reasonable" period of time upon "reasonable notice." The law rarely defines these requirements with precision and their application accordingly will depend on the particular facts and circumstances of a relationship.

Nevertheless, a relationship of several years usually will be considered a reasonable amount of time, and written notice of not less than 30 days generally is considered a reasonable notice period where a multi-brand wholesaler loses a single supplier.

Use of contracts

The differences between franchise and non-franchise states also can affect a winery's views on entering into a written agreement with a given wholesaler. Today, much of the wine industry still operates under "handshake deals" between suppliers and their wholesalers.

Only the largest wineries use contracts in all states as a norm, often because their agreements include sophisticated performance, incentive, and other mechanisms.

In non-franchise states, the absence of a contract may produce some uncertainty, but the usual ability to terminate a wholesaler with relative ease makes a contract less necessary in a non-franchise state than a franchise state. In franchise states, however, a winery should consider the benefits of a written agreement if it believes it possesses the bargaining power to obtain reasonably favorable terms.

In the absence of a written agreement, a winery often possesses little evidence of the performance standards it expects of its wholesalers. That lack of clear standards can greatly hinder the winery's ability to demonstrate "cause" to terminate.

Even where litigation seems remote, a winery's ability to credibly demonstrate "cause" provides great leverage that can help persuade a wholesaler to transfer brand distribution rights (via a sale or a swap) to a successor wholesaler more to the winery's liking.

Exclusivity

Another basic item of legal due diligence involves determining whether a state requires wholesaler appointments on an exclusive basis. In general, exclusive appointments are the industry norm regardless of state law.

By giving a wholesaler an exclusive territory, the wholesaler has a greater incentive to engage in brand-building

For expert regulatory and licensing assistance, count on us.
CSA
COMPLIANCE SERVICE *of* AMERICA
800-400-1353
www.csa-compliance.com

Packaged Glycol Chiller Systems
Designed Specifically for the Wine Industry
When keeping COOL is everything™
PRO
REFRIGERATION INC
800-845-7781 www.prochiller.com

activities because it likely will reap the sales benefits from those activities. Without this assurance, a wholesaler may expend efforts to open retail accounts and build awareness of a brand, only to see another company benefit from those efforts.

Nevertheless, the theoretical ability to appoint other wholesalers for the same brand in the same territory — usually called "dualing" — may give a winery leverage over a wholesaler. While this leverage may not be crucial in non-franchise states, in the few franchise states where dualing is permitted, it provides the winery with significant leverage and a way to work around a non-performing wholesaler.

On the subject of exclusivity, three unusual states deserve special mention. Minnesota and Oklahoma are so-called "reverse franchise" states. In these states, the law mandates that a winery sell products to any and all wholesalers that want the brand.

In practice, many brands effectively go through a single house. In theory, however, every wholesale customer in the state can buy an available wine. West Virginia also presents a unique circumstance — its law explicitly prohibits exclusive territories for wine sales.

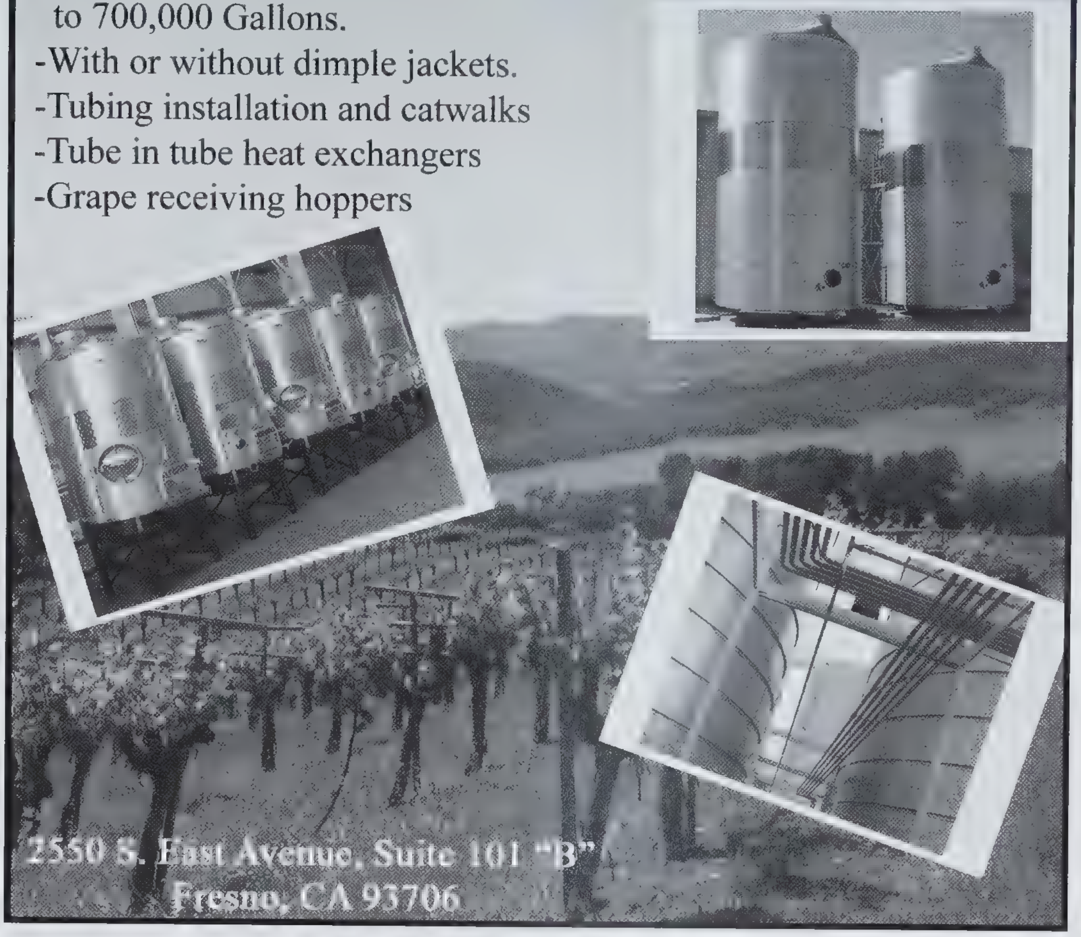
Other legal issues

As the foregoing hopefully illustrates, the laws of individual jurisdictions vary greatly when it comes to distributing wine through three-tier (or control) channels. The issues highlighted above do not capture all of the many differences between the states — from trade practice restrictions to licensing peculiarities to brand registration requirements.

Armed with some understanding of the legal distribution landscape, however, wineries can better equip themselves for the challenges and rewards of distributing through the three-tier system. ■

Marc E. Sorini is a partner in the law firm of McDermott Will & Emery LLP, based in Washington, D.C. office. He is the leader of the Firm's Regulatory Practice Group and Alcohol Regulatory & Distribution Group, where his practice focuses on regulatory, distribution and litigation issues facing the alcohol beverage industry.

SANITARY STAINLESS WELDING, INC.
Phone: (559) 233-7116 ~ Fax: (559) 233-7172
jimm@sanitarystainless.com
-Stainless Steel Tanks from 250 to 700,000 Gallons.
-With or without dimple jackets.
-Tubing installation and catwalks
-Tube in tube heat exchangers
-Grape receiving hoppers



2550 S. East Avenue, Suite 101 "B"
Fresno, CA 93706

WineSECRETS™
Providing North America with new eco-friendly Mobile and In-House wine technologies on demand.
- STARS Tartrate Stabilization & pH Reduction
- Alcohol-Flavor Balance
- Volatile Acidity Reduction
- Wine Taint Removals: 4-EP • Smoke
- Must Concentration via Reverse Osmosis
- Wine Clarification via Cross-flow Filtration
- Hardpress Recovery via Ultrafiltration

CA: Sebastopol - OR: Dundee - TX: Spring Branch
VA: Ashburn - BC: Summerland- ON: Niagara on the Lake
www.winesecrets.com
Tel: 888.656.5553

AMADOR

Classic Zinfandel region growing for the future

18 acres of the Shake Ridge Vineyard has every other tractor row in permanent cover alternating with a "green manure" cover to be mowed and spaded. More vigorous blocks are managed with every tractor row "no till."

BY Linda Trotta

Amador County's star is on the rise. The quest for increasing quality has taken center stage in a region long heralded for classic California Zinfandels. This pursuit is led by growers and winemakers with long histories in the appellation, as well as vintners new to the region. Their efforts are being recognized by peers, critics, and consumers alike.

PWV spoke with two respected Amador County growers/vintners, both veterans in their craft. One has made wine in the region for 25 years; the other is a recent transplant from Napa County.

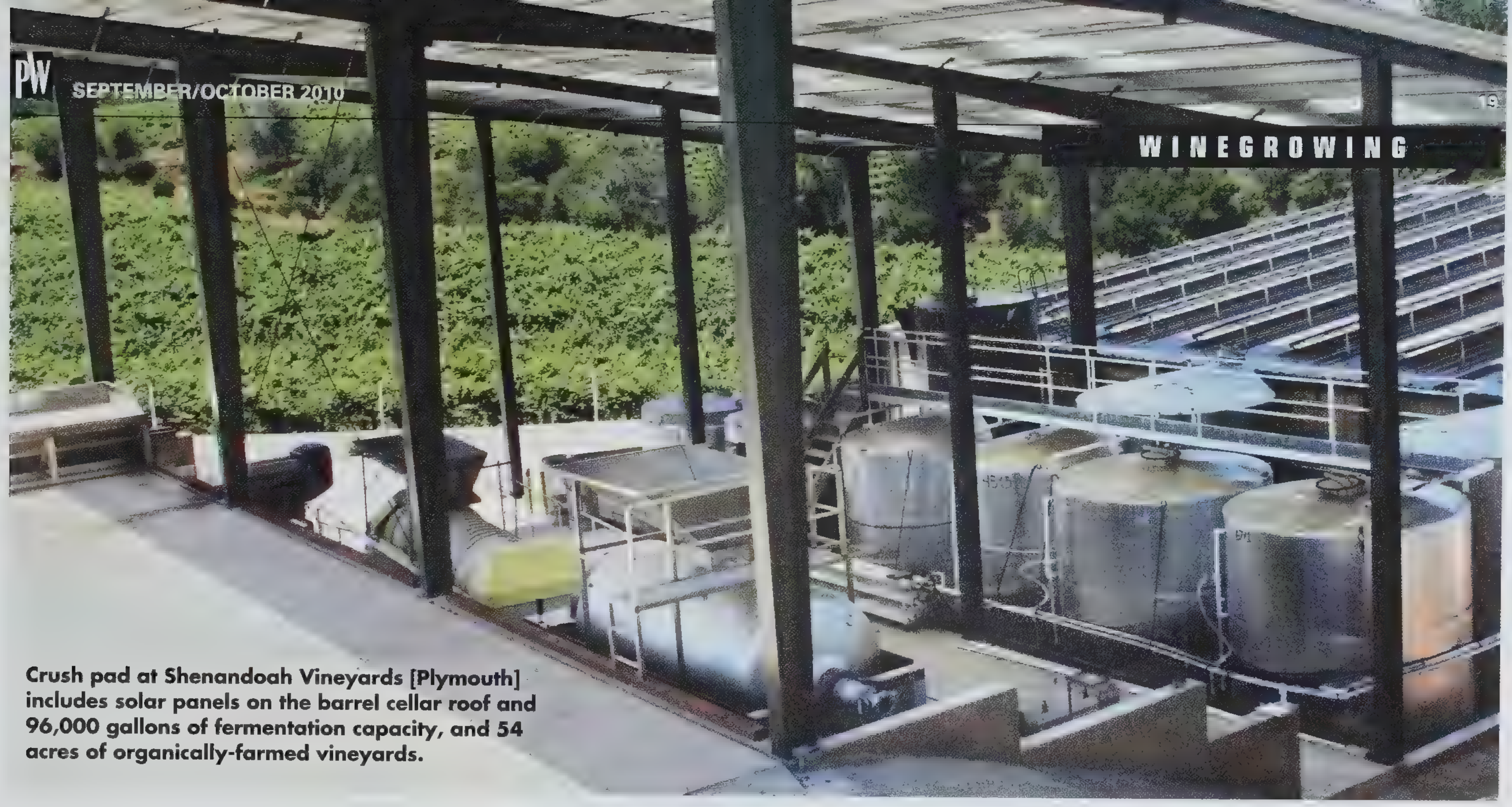
Appellation overview

Winegrape growing in the Amador County AVA dates to the mid-1800s, during the California Gold Rush era. By the late 1800s more than 100 wineries were established, more than any other region in California at the time. In 1888, the University of California established the Foothill Experiment Station near the town of Jackson, with 130 grape varieties.

The end of the Gold Rush, combined with the passage of Prohibition two decades later, led to a decline in the Amador winegrape industry, which remained largely dormant for 50 years. The modern renaissance for Amador grapegrowing started in the late 1960s, when the unique quality of its Zinfandel was rediscovered and the economic value of grapes increased. Today, 60% of the grapes grown in Amador leave the county to be made into wine elsewhere.

Amador County is situated in the western foothills of the Sierra Nevada mountain range in central California,

Disking of 120-plus-year-old, dry-farmed, head-pruned Rinaldi Zinfandel vineyard in Fiddletown in early June 2010. Disking is done shortly after a rain when the soil is still damp, both for weed management and to retain moisture in the ground by creating a "soil seal." It is done multiple (2 - 4) times each year depending on climate conditions.



Crush pad at Shenandoah Vineyards [Plymouth] includes solar panels on the barrel cellar roof and 96,000 gallons of fermentation capacity, and 54 acres of organically-farmed vineyards.

approximately 50 miles east of Sacramento. The appellation's roughly 3,700 bearing vine acres sit at elevations ranging from 300 to 2,500 feet. Annual rainfall in the county as a whole averages 30 to 35 inches, while vineyards at the lowest elevation average about 19 inches.

Most plantings are on volcanic *Sierra Series* soils: well-drained, moderately acidic, sandy clay loam derived from decomposed granite, with moderately low permeability. Nitrogen and phosphorus deficiencies are quite common. In general, this nutrient deficiency, combined with the low water-holding capacity of the soils, contributes to small canopies and low yields (3.2 tons/acre on average).

A common misperception is that Amador is a hot region. In fact, it rates as a high Region 3 on the UC Davis heat

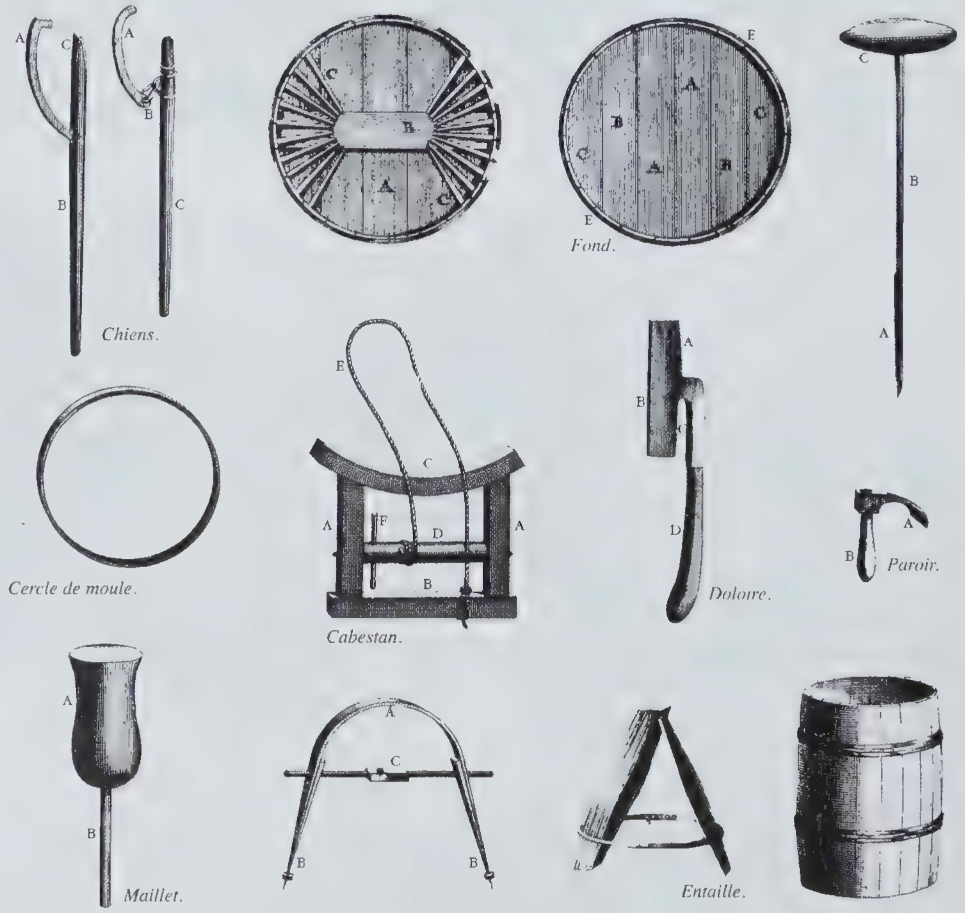
Spot on
SIHA
Biotechnology for your wines
Yeasts, bacteria, enzymes and nutrients
from the makers of
BECOPAD
BEGEROW
www.begerow.com

summation scale, making it comparable to St. Helena and cooler than Calistoga. Maximum summer temperatures are in the upper 80° to low 90°F range. Cooling breezes typically pick up in early afternoon, emanating from the San Francisco Bay Area and river deltas. At sunset, hot air rises from the Central Valley and cool air cascades down the Sierras and settles in. As a result, night-time temperatures average in the upper 50°F range. This 35° to 40° diurnal temperature shift is widely credited as a significant factor in grape quality, contributing to acid balance and tannin development in red wines.

Amador's signature variety continues to be Zinfandel, with more than 2,000 acres planted. Amador County is home to the oldest existing Zinfandel plantings in California, dating from 1865. Emerging varieties in the past two decades include Italian, particularly Barbera and Sangiovese; French (Syrah); and Spanish (Tempranillo).

WE DELIGHT IN THE ART OF THE COOPER: CANTEEN/BARRELS MADE DURING THE NAPOLEONIC WARS; OLD COOPERS' TOOLS NOW RARELY USED; CARVINGS ON THE HEADS OF CASK. THE COOPERAGES THAT WE REPRESENT CAN DO THIS: THEY CAN MAKE ALL KINDS OF BARRELS, CASKS AND CAN CARVE WHATEVER YOU WANT ON THE HEADS. BUT THE BEST ART TAKES PLACE INSIDE THE BARREL!

The Art
Of The Cooper



Mel Knox Barrel Broker

505 29th Avenue, San Francisco, CA 94121
415.751.6306 Fax 415.221.5873
www.knoxbarrels.com

Francois Freres of Burgundy and Hungary Tonnellerie Taransaud of Cognac
Barrels and Casks, Tanks and Ovals

About 600 acres of vineyards are more than 65 years old. Employment of organic farming practices is a growing trend. At least 10% of the vineyards are farmed organically and almost all are farmed sustainably; reports are that these percentages will increase steadily.

Preferred rootstocks for new plantings are St. George and 110-R, with some 1103-P and 101-14. Older plantings are own-rooted and while Phylloxera is slow moving in the region, it is gradually wearing down many of these vines.

Sub-appellations

The two main sub-appellations are the Shenandoah Valley of California and Fiddletown. The Shenandoah Valley AVA (SV) includes 3,074 acres (plus 120 acres that cross over into El Dorado County). The SV AVA is seven miles long by five miles wide, located in the northern portion of the county near the town of Plymouth. The Fiddletown AVA is east of the SV AVA and ranges from 500 feet to 1,200 feet in elevation. The terrain is steeper with more rolling hillsides and the climate is cooler than SV, bringing later ripening. While geographically larger than SV, it has only 215 planted acres.

Terre Rouge / Easton wines

Bill Easton has been growing and making Amador wine for 25 years. He founded Terre Rouge and Easton Wines (Domaine de la Terre Rouge) in 1985, outside Plymouth. "I grew up drinking wine from the Shenandoah Valley. Then I was immersed in European wine when I owned a wine shop in the San Francisco Bay Area. The French have a term for wine that expresses the place where it is made: *goût de terroir*.

Amador is one of the few regions in California where I experience the place in the finished wine. I wanted to make place-oriented wines and Amador and the Sierra Foothills has so many varied *terroirs* where varieties such as Zinfandel and those from the Rhône excel."

Easton produces a total of 20,000 cases per year, comprised of 32 bottlings, including Zinfandel, Syrah, Barbera, Cabernet Sauvignon, Viognier, Sauvignon Blanc, and other Rhône varieties. The Terre Rouge label has an exclusive Rhône focus, the grapes are grown and sourced from vineyards in various areas of the foothills region, including Amador. Easton Wines include non-Rhône varieties grown primarily in Amador, as well as other areas of the foothills region.

Easton owns and leases estate vineyards in Shenandoah Valley and Fiddletown. These properties include 21.5 estate acres in Fiddletown (13 acres of Syrah, 6 acres of Zinfandel, and 2.5 acres of Viognier), and 30 estate acres in Shenandoah Valley (Zinfandel and Cabernet Sauvignon). He also contracts with other growers with whom he works closely on farming practices.

Vine spacing on most new plantings is 6 x 8 feet. All estate vineyards are organically farmed. Mildew is easily controlled with organic wettable sulfur applications, and barn owl boxes attract enough owls to effectively manage the rodent population.

"The biggest challenge in farming organically is managing in-row cultivation," reports Easton. A French plow does about 80% of the job; hand labor with shovels and weed eaters takes care of the remainder.

In normal rainfall years, Easton applies no irrigation. When irrigation is called for, he uses visual observation to gauge when and how much water to apply. Typically, this is 7 to 10 gallons per vine every 14 days. Harvest typically starts in late September.

Easton provides two examples of how he brings the signature of historic Amador vineyards to his wines:

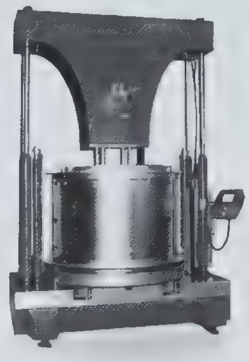
Terre Rouge Syrah, Sentinel Oak / Pyramid Block ($35/bottle) is a 500-case, single-vineyard bottling. The five-acre vineyard (planted in 1984), is own-rooted UCD Syrah 1 clone. Vines are spaced 8 x 12 feet in decomposed granite-based soil that Easton describes as similar to the soils of Hermitage in the Rhône region. The vineyard is on a south-facing slope (1,400 feet elevation), cane-pruned with two sets of movable catch wires. Average yield is 2.5 tons per acre.

YOUR SUCCESS IS OUR PRIORITY

KLR Machines, Inc.

BUCHER vaslin

Bucher Vaslin Vistalys R2 Optical Sorter



Bucher Vaslin JLB 20 Basket Press

ASK ABOUT OUR FULL LINE OF WINERY EQUIPMENT:
Receiving Hoppers, Conveyors, Destemmers, Presses, Pumps, Sorting Tables & **Vistalys, our highly accurate optical sorter.**

KLR Machines
(707) 823-2883
sales@klrmachines.com
www.klrmachines.com

Call or email for your customized quote today.
Leasing also available.

TEP
ENGINEERING

Trinchero Napa Valley

Mechanical Design Services for Wineries

HVAC
REFRIGERATION

PLUMBING
LEED DESIGN

WWW.TEP.NET
707-538-0400

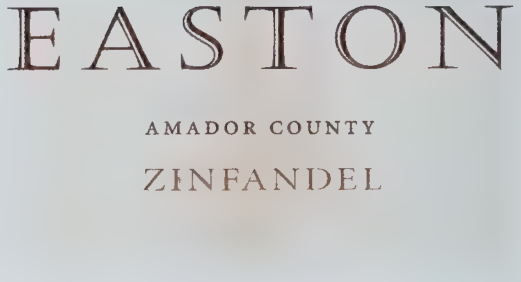
880 2ND STREET
SANTA ROSA, CA 95404

Application of compost to organically-farmed estate Terre Rouge Syrah in late Fall, with composted mix of urban green waste material with natural mineral amendments added, as indicated by soil sampling. Material is applied in the vine row after harvest before large rainfalls begin. The compost's slow release mix helps achieve living, balanced soils that create healthier vines, with more resistance to pests and diseases. Harvested grapes express greater purity of flavor, and more enologically-desirable chemical balances (sugar/acid/pH ratios).

Through 2009 the vines were farmed organically with the exception of an in-row herbicide application. In 2010, the herbicide was eliminated. Easton describes the wine as "classic-style Syrah with cool-climate characters of gaminess, smoke, forest floor, and spice with layered dark fruit and fine tannins."

Easton Zinfandel, Fiddletown, Rinaldi-Eschen Vineyard ($28/bottle) is a 500-case, single-vineyard bottling. The 65-acre vineyard includes one-half acre of vines dating to 1865 — the oldest Zinfandel plantings in California — and 38 acres planted in the early 1900s. Vines are spaced 9 x 9 feet and head-pruned. The clone is a Heritage selection and is part of the ZAP Heritage program. Replants are planted with cuttings from the block.

The vines are dry-farmed, with the exception of irrigation to young replants, and farmed organically, with the exception of in-row herbicide. Yields top out at 3 tons per acre. Easton describes the wine as "finessed, elegant style, soft tannins, dark red and blue fruit with white pepper and good natural acidity."



In Easton's experience the most significant factors, practices, and innovations impacting the evolution of grape and wine quality in Amador in recent years are: "There is more attention to detail with work being done in the vineyards. We are attempting to make the wine in the vineyard with more evolved cultural practices before we bring grapes into the cellar.

"Cellar practices have also evolved. High-end cooperage programs and state-of-the-art equipment are now found at the best wineries. Winemak-

Breckenridge Winery Management Software

Manage all your winery operations with one integrated, affordable software package.

Winery Module
Cellar Operations
Lot Tracking
Winemaker's Notes
Barrel Management
Vineyard Tracking
Shipping and Invoicing
Advance Orders
Allocations
Wine Club Orders
Point-of-Sale
Tasting Room
Accounts Receivable
TTB Reporting
FDA Support

Accounting Module
General Ledger
Accounts Payable
Purchase Orders

Get started for only $5000.
Multi-User, Multi-Site and Remote Access Available.
Packages to support 1 to 300 users.

Breckenridge Software Technologies, Inc.
(303) 267-0024
www.breckenridgesoftware.com

ing techniques and philosophies are not just parochial anymore, because they acknowledge an awareness of, and also often access an acquired knowledge base of, what else is occurring in the cellars of the world's finest wineries."

Shake Ridge Ranch

Ann Kraemer has 25 years experience as a viticulturist and consultant in Napa Valley, working with properties that include Domaine Chandon, Cain, and Shafer.

"I looked up and down California for the right spot to plant my own vineyard for 20 years," she reports. This extensive search led her to Amador County. In partnership with her family, Kraemer established Shake Ridge Ranch in 2001, on a 215-acre property located five miles east of the town of Sutter Creek. Italian immigrants had originally settled the land in the 1870s. They raised cattle and cleared land for orchards, vegetables, olives, and the first winegrapes on the property.

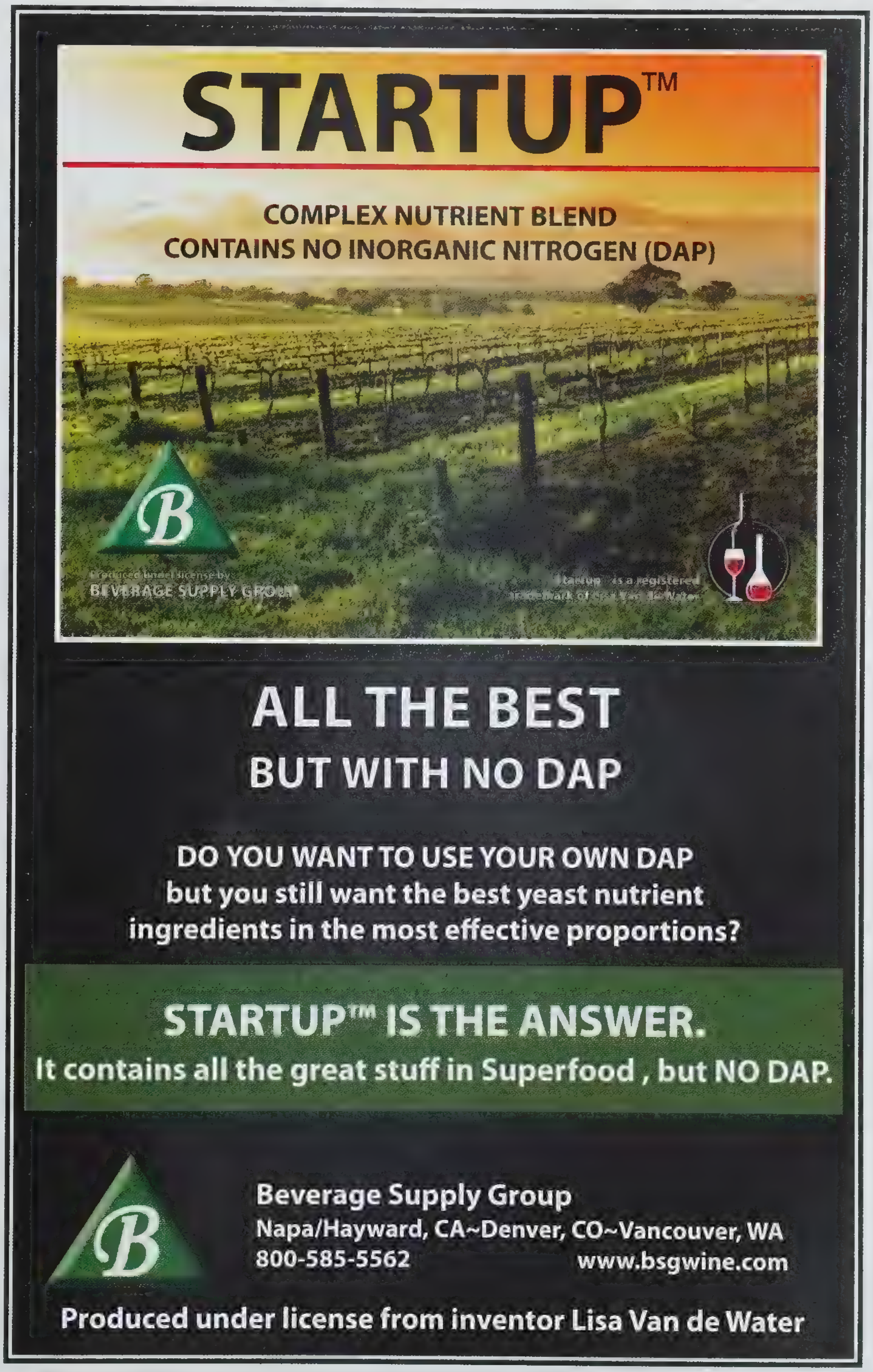
Kraemer was attracted to Amador by several factors. "The soils are deep, well-drained, red loam, and rocky. They are comprised of decomposing compressed sedimentary rock with some moisture-holding capacity. Climatically, overall it is cooler than I expected. Though summer maximum temperatures are on the high side, summer night-time lows are typically in the 50°s. I appreciate the impact this diurnal shift has on acid balance and tannin development."

How did she decide on the Shake Ridge parcel? "It is a hilly site encompassing variable soil profiles and exposures. This provides flexibility in growing different varieties and targeting the winemaker's stylistic goals."

Kraemer brings precision farming practices honed during her years in Napa. Of the 46 planted acres, the first plantings were in 2003 (34 acres), and 12 more acres were planted in 2009.

In developing the vineyard, 22 6-foot deep soil pits were dug over the 46 acres. The pits revealed roots present at 6 feet with slight extractable moisture remaining at 3 to 4 feet deep, even in August. The top 18 inches contained 10% to 40% rock. Between 18 to 36 inches in depth, there is 30% to 100% rock. The type of rock varied throughout the ranch, including red basalt stone, soapstone, quartz, and black shale.

Zinfandel, Syrah, Barbera, Grenache, Tempranillo, Mourvedre, Petite Sirah, Primitivo, Viognier, and Graciano were planted, plus small experimental plots of Bordeaux varietal.


STARTUP™

COMPLEX NUTRIENT BLEND
CONTAINS NO INORGANIC NITROGEN (DAP)

Produced under license by
BEVERAGE SUPPLY GROUP

Startup™ is a registered trademark of Lisa Van de Water

ALL THE BEST
BUT WITH NO DAP

DO YOU WANT TO USE YOUR OWN DAP
but you still want the best yeast nutrient
ingredients in the most effective proportions?

STARTUP™ IS THE ANSWER.
It contains all the great stuff in Superfood , but NO DAP.

Beverage Supply Group
Napa/Hayward, CA~Denver, CO~Vancouver, WA
800-585-5562
www.bsgwine.com

Produced under license from inventor Lisa Van de Water

Rootstocks chosen to match the soil profile of each block and characteristics of the variety, include 101-14, 110-R, 1103-P, St. George, 420-A, and 3309. Kraemer states, "It is still too early to determine the 'winners and losers,' although definite nutritional attributes are becoming apparent."

Vine spacing and trellising systems are designed to give optimal sunlight to balanced vines on different hillside exposures. Bilateral cordon VSP vines are spaced 8 x 5 feet and head-trained vines are spaced 9 x 7 feet. Row orientations are tailored to the aspect of each block. Kraemer's preference is to plant in a generally east/west direction, with tweaks to the north for optimal sun exposure without sunburn. Pruning, canopy, and crop management practices are tailored to each block, working for optimal vine balance and targeted wine style.

The vineyards are farmed organically with the exception of in-row herbicide. Weed control is a challenge due to the rocky soil content. Young blocks are spaded every tractor row for the first one to two years.

Kraemer's preference is for permanent cover crops on established blocks. However, the vines in some blocks are not yet strong enough to tolerate no-till cover in every tractor row. In these blocks, alternate tractor rows are seeded annually with a "soil builder" mix of oats, barley, and peas which is then spaded. Once the strength of the vines improves, she will eventually convert to permanent cover.

Numerous owls living in the trees surrounding the vineyard help contain the large rodent population. Releases of predaceous mites and thrips control mites. "Green manure" cover crops and soil amendments (mostly gypsum) are the basis for the vine nutrient program. The program varies by block, depending on variety, rootstock, vigor, and soil. Kraemer watches the weather for mildew pressure, and adjusts her spray program accordingly.

Irrigations (when needed) are long and deep. No irrigation is applied until after the vines have stopped growing and the first fruit thinning pass is completed. Exception is taken in dry winter years, when an irrigation may be done prior to or at bud break. The objective of this is to help with nutritional uptake of the vine, rather than encourage shoot growth. Thereafter, the strategy varies by growing season.

Typically, however, there is one irrigation before and one after veraison. If water is needed closer to harvest, then lower volumes are applied. Inline shut-off valves are used to water parts of blocks when necessary.

Average overall yield for the last three vintages is 2.5 to 3.6 tons per acre. Individual blocks average between 2 and 4 tons per acre. Kraemer would like to increase yields of the weaker

TONNELLERIE
GARONNAISE
MARMANDE
FRANCE

For more information please contact

Manny Martinez 510-799-1518
boutesusa@sbcglobal.net

Andy Gridley 707-363-7555
usaboutes@yahoo.com

www.garonnaise.com

blocks, by building up their capacity to carry more fruit.

Kraemer shares some challenges of farming Shake Ridge:

1) Soil nutrition – High magnesium and low cation exchange (phosphorus, boron, zinc, calcium). Compost application and cover crops build up soil nutritional balance — a slow process, but it is working.

2) Mites – Beneficial releases are employed.

3) Zeroing in on the optimal timing of fruit thinning and irrigations.

4) Precision, custom farming requires a lot of hand labor, which is costly with a small pool of skilled workers in the area.

What are the biggest opportunities that farming in Amador brings her? "Working with varieties I have not worked with before. Admittedly, this is definitely also a challenge at times. Since I am working with my family's vineyard, as opposed to an employer or client, I have the freedom to take more risks. If I think that something is the right thing to do, I can do it. I am always learning something new."

A portion of Shake Ridge fruit (25% to 30%) goes to make wines for the Kraemer family's own brand, Yorba Wines. The wines are made by Ken Bernards at Ancien Winery (Napa, CA).

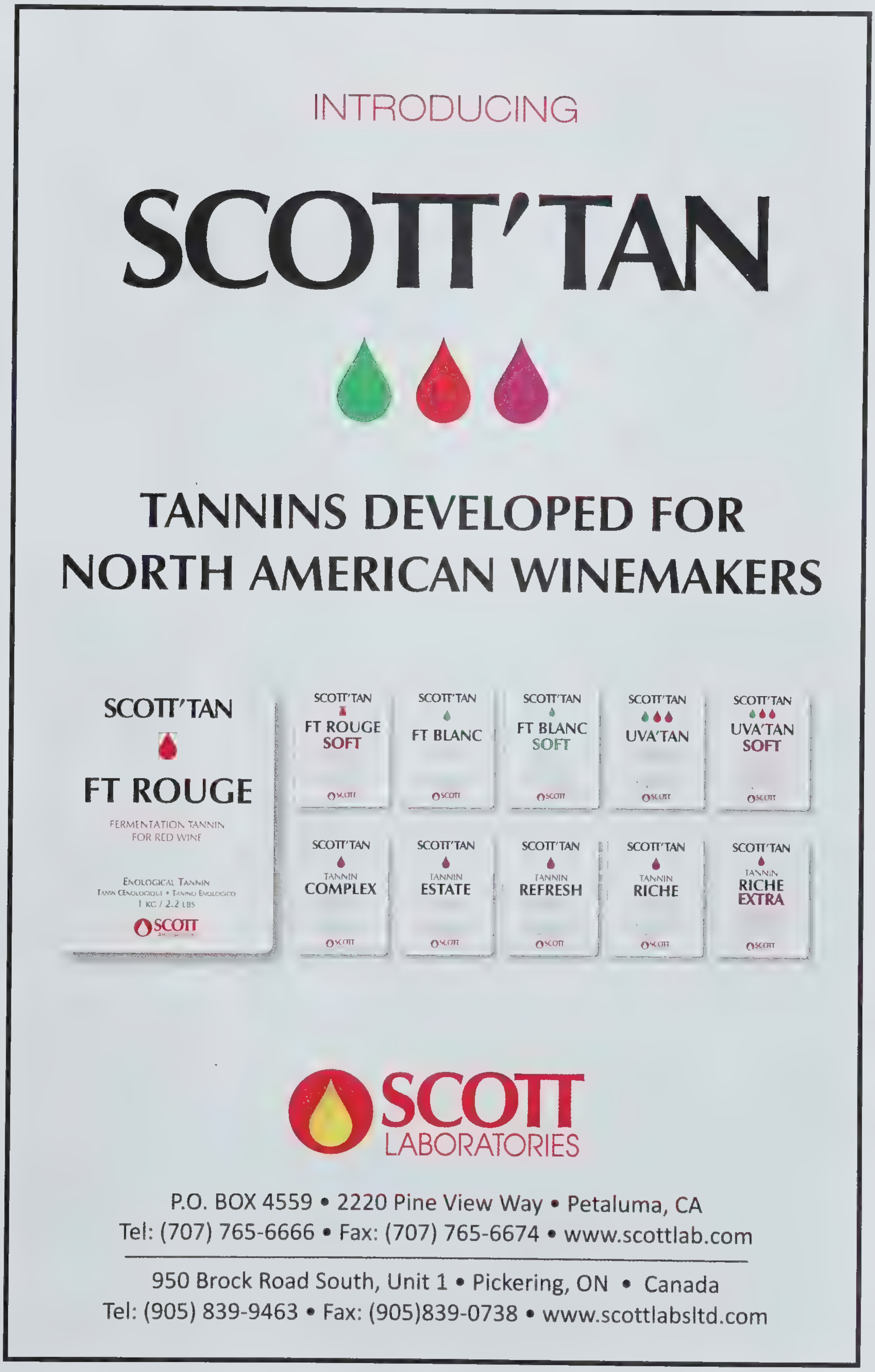
Current releases (2,000 cases total), include Zinfandel ($28), Barbera ($26), Tempranillo ($38), Syrah ($32), and a "Shake Ridge Red" blend ($28) whose components differ each vintage.

"All of the wines express the signature characteristics of the ranch," explains Kraemer. "The tannins are big, yet resolved. There is bold fruit, balance, and structure. The goal in making the wines is to show the potential of the ranch. While we have some great winemakers buying our fruit, it is good to have our own brand connected with the vineyard."

The balance of Shake Ridge fruit is sold to other wineries. In 2010, Kraemer will sell to a total of 12 wineries. Two are in Calaveras County (Hatcher and Newsome Harlow). The others are in Napa and Sonoma Counties that include Favia, Keplinger, Courier, Vino D'Angelo, Jazz, Turley, and Gallica. As a testament to Kraemer's viticultural prowess and the inherent qualities that Amador has to offer as an appellation, the fruit is coming to be in high demand.

Conclusion

The history of Amador County is a rich one. Its future is in the hands of talented growers with decades of experience in the region, and also those new to the area bringing fresh perspectives. Over the past 40 years, winegrape growing in Amador has become more complex, with combinations of century-old and newly planted vineyards and expansions into different grape varieties. The challenge of this diversity has been met with an awareness that in order to maximize quality, collaboration and flexibility are essential. ■



INTRODUCING

SCOTT'TAN

TANNINS DEVELOPED FOR NORTH AMERICAN WINEMAKERS

SCOTT LABORATORIES

P.O. BOX 4559 • 2220 Pine View Way • Petaluma, CA
Tel: (707) 765-6666 • Fax: (707) 765-6674 • www.scottlab.com

950 Brock Road South, Unit 1 • Pickering, ON • Canada
Tel: (905) 839-9463 • Fax: (905)839-0738 • www.scottlabsltd.com

WINEGROWING

Monitoring fruit zone temperatures for optimum grape and wine quality

BY Erika Winter, GrapeLinks, Melbourne,
Stephen Lowe, Stony Creek Vineyards, King Valley,
Nick Bulleid, MW winemaking consultant, Canberra,
David Braybrook, Vitisolutions, Melbourne,
Matt Aldridge, Aldridge Wine Consulting, Melbourne, Australia

Various bioclimatic indices have been developed to characterize site and seasonal potential for production of high-quality grapes. A.J. Winkler characterized seasons by Growing Degree Days (GDD), which are based on average daily temperatures minus 10°C (50°F), below which there are no active physiological processes in grapevines.[8] This does not work well in warmer climates, as it matters how long the maximum temperature prevails — creating damaging heat loads — not how high the number is that enters the GDD equation.

J. Bergquist *et al.* built on existing experiments of sunlight effects on grape quality and established that the beneficial temperature bracket for red grapes may be between 15°C and 35°C (59°F and 95°F) and that heat above 37°C has detrimental effects on Brix, TA, and color, more so in Grenache than in Cabernet Sauvignon.[1]

A.J.G. Pirie and M.G. Mullins determined that Pinot Noir grapes were more sensitive to heat and showed a decrease in color production above 26°C (79°F).[5] S.E. Spayd *et al.* clarified that it is temperature, not light, that produces less color in exposed grapes.[6]

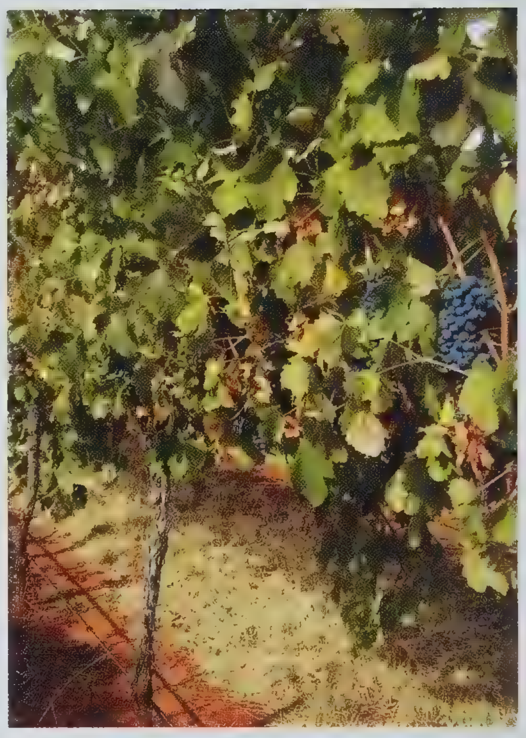


Figure 1: East facing side of a King Valley (Australia) Shiraz vine with differential foliage management, resulting in grapes exposed to early morning sun, and shielded from late morning sun.

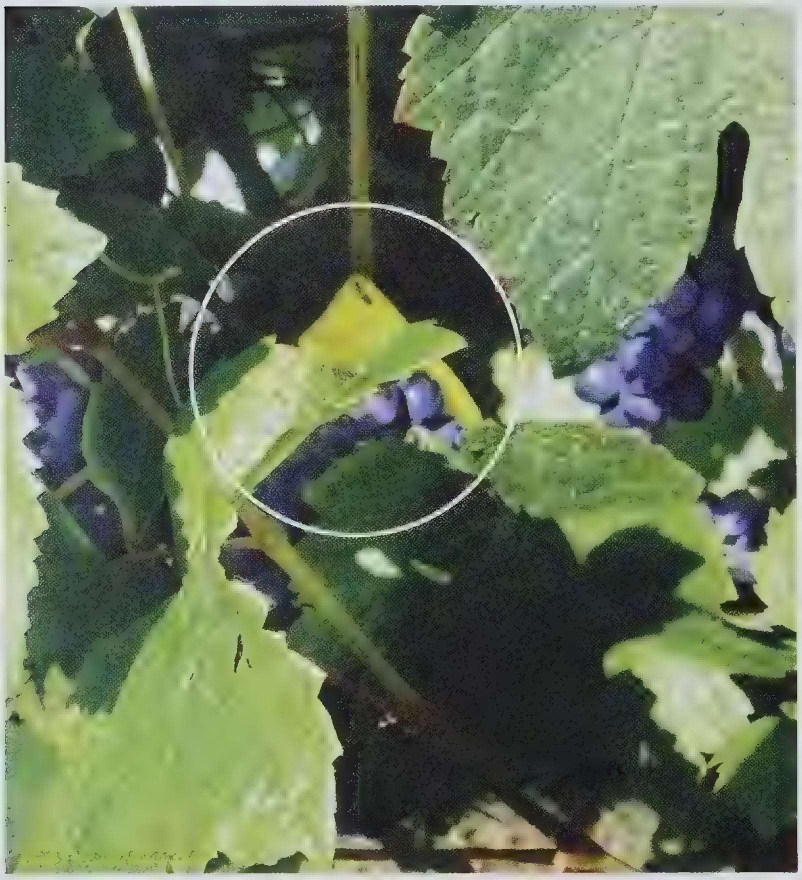


Figure 8: Pinot Noir cluster zone (Australian summer 2010). Logger and cluster front and back temperatures taken by infrared thermal readings at 2cm distance from clusters/ data loggers inside of the canopy. Exposed to the east, leaf-shaded to the west.

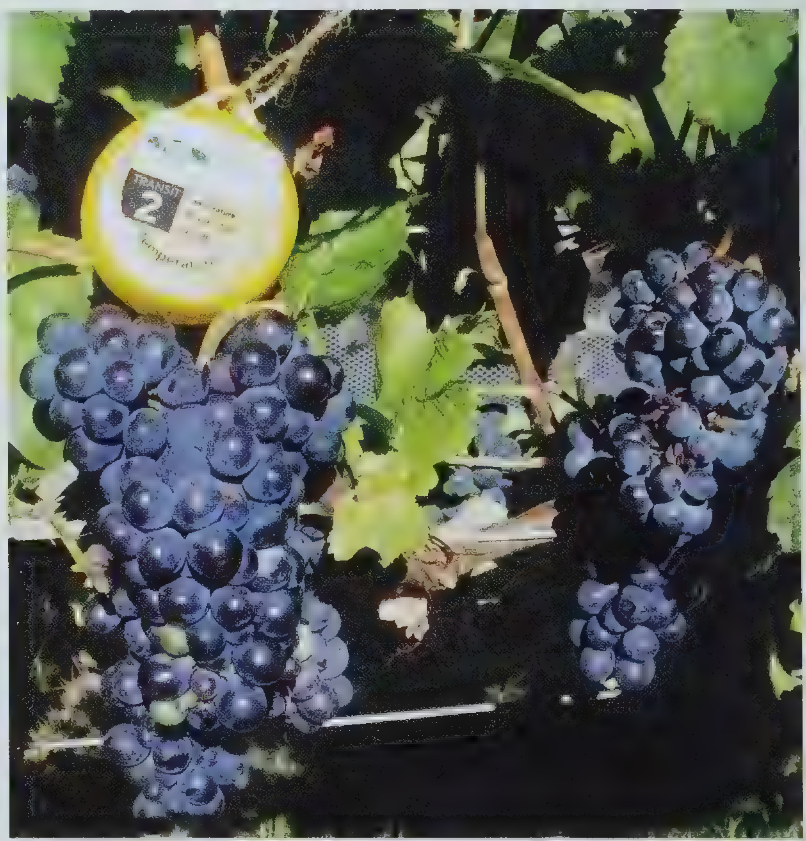


Figure 9: Pinot Noir cluster zone (Australian summer 2010). Logger and cluster front and back temperatures taken by infrared thermal readings at 2cm distance from clusters/data loggers inside of the canopy. Exposed to the west, in comparison to the shade temperatures in the tractor row.

In 2005, G.V. Jones *et al.* expressed concern about the impact on global wine quality of warming of vineyards due to climate change.[3] M. White *et al.* predicted that the area suitable for premium wine production in the U.S. will most likely decline in the 21st century.[9] M. White *et al.* found that the largest reduction will be caused by projected increases in the frequency of hot days during the growing season (above 35°C) using the Intergovernmental Panel on Climate Change (IPCC) A2 scenario.

Questionnaire data collected in 10 Southeast Australian viticultural regions (2009) reported grape damage, due to several days of heat (above 40°C), which was greatest in vineyards where additional water was unavailable, those which had vertically positioned trellises with an open fruit zone, and those with north/south rows with clusters on the west side exposed to hot afternoon sun.[7] Very few of these grape growers had access to real time daily measurements of the temperatures the grapes actually experienced.

Australian benchmarking trials

Long before the heat waves of 2007 and 2009, grape growers in north-

Award-winning quality... a tradition for over 20 years...has made Vintage Nurseries the perfect pairing for growers desiring the finest, most reliable yields. Our state-of-the-art technology, industry-leading service and wide selection make Vintage Nurseries a California classic. Whether your needs include the finest field-grown dormants, potted green vines, rootstock rootings or own-rooted plants and cuttings, Vintage Nurseries assures you of the finest quality products... every time, for every wine. Place your order today, and capture classic quality from the leader in the field.

Vintage
NURSERIES
A CUT ABOVE

Wasco 661-758-4777
Paso Robles 805-237-8914
Modesto 209-523-8036
Santa Rosa 707-542-5510

800-499-9019
www.VintageNurseries.com
Serving the Wine, Table Grape and Raisin Industries

AaquaTools, Inc.
water driven products & solutions
www.AaquaTools.com
SERVICING THE WINE INDUSTRY SINCE 1985
HIGH PRESSURE WASHERS
KEW
KEW'S POSEIDON 7-66-SS
The best portable electric high pressure washer produced in the world today!
PRICE $3,700
AaquaTools
AaquaBlasters
The Industry's BEST Performing Cleaning Heads
Clean Barrels & Tanks with one tool!
CONTACT US TODAY
www.AaquaTools.com
Toll Free: (800) 777-2922
Sacto: (916) 635-2922
Napa: (707) 558-5100

east Victoria, Australia had asked for more precise ways to measure the temperatures in the vicinity of their Shiraz clusters, as opposed to receiving daily minimums and maximums from the closest weather station. This led GrapeLinks Australia and collaborators to use electronic temperature data loggers (Tinytag Transit Temperature Logger, Omni Instruments, Inc., Visalia, CA) hanging from the fruiting wire to measure fruit zone temperatures on an hourly basis.

Five years of data sets have been collected that encompass canopy assessments, photography, grape and wine chemical analyses, and grape and wine sensory assessments, during which the importance of differential exposure (open to the morning sun and protection from heat on the afternoon sun side) became clear.

A relationship between cumulative degree hours measured by data loggers in the fruit zone from veraison to harvest and the tasting scores of five-month-old Shiraz wines were demonstrated for the 2005 and 2006 vintages. Too few degree hours from veraison to harvest led to herbaceous non-fruity wines, and excessive amounts of degree hours led to cooked flavors.[11]

In subsequent years, average degree hours were calculated by dividing the total by the number of days between veraison and harvest to compare vineyards, accounting for the differences in ripening duration. A significant positive correlation existed between exposure to the morning sun side of the canopy and anthocyanin concentration in grapes, whereby less than one leaf layer over clusters on the morning sun side produced the best color, even in a warmer year.[12]

In the hot year of 2007, many vines in northeast Victoria lost basal leaves due to heat, low rainfall, and lack of irrigation water from January onwards. The effect of a drought-affected canopy on fruit zone temperatures was clearly shown, in comparison to a vineyard that received short and frequent irrigations, providing necessary foliage protection of clusters as seen in the daily temperature curves produced by the data logger hanging in the fruiting zone.[12]

When data logger, vineyard, and Pinot Noir wine results were reviewed for three years (2006-2008) on the Mornington Peninsula (southern Victoria), the importance of optimum fruit zone temperatures for grape and wine quality could be demonstrated, in particular for desirable fruit aroma and color in grapes and wine.[14]

In 2008/2009, measurements in the King Valley included Merlot and data loggers were inserted in December to monitor pre-veraison heat waves. It was demonstrated that not a wide

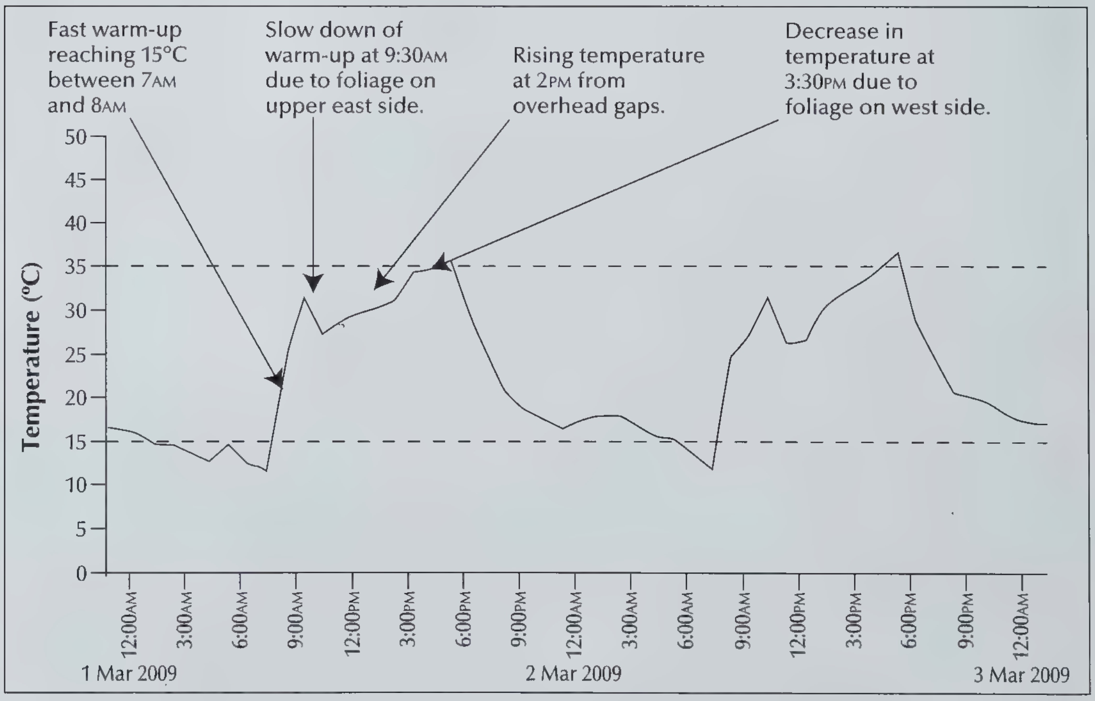


Figure 2: Diurnal curves produced with a temperature data logger in the cluster zone of a Shiraz vine in Figure 1, on two warm days in March 2009.

difference between day and night temperatures (cherished in European cool climates), but moderate amounts of cold nights (cumulative degree hours below 15°C) and of heatloads (above 35°C), produced the best grape attributes.[13]

S.D. Cohen *et al.* found that best phenolic development occurred when grapes were kept in moderate temperatures (with a high proportion of night temperatures around 10°C and day temperatures below 35°C).[2]

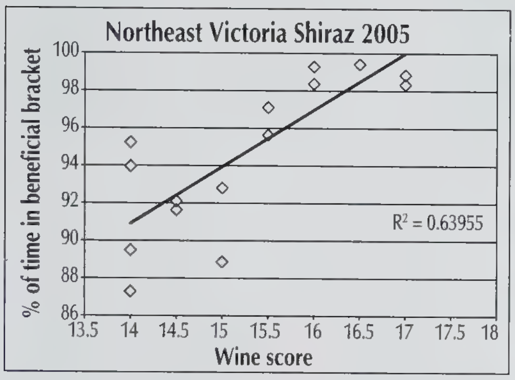


Figure 3: Wine scores of 15 Northeast Victorian young Shiraz wines, and the data logger-derived percentage of time in the cluster zone between 15°C and 35°C, from veraison to harvest 2005.

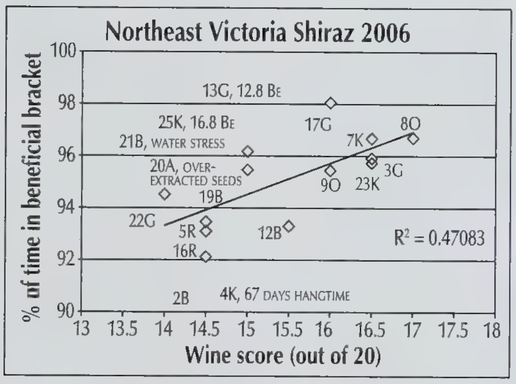


Figure 4: Wine scores of 17 Northeast Victorian 5-month-old Shiraz wines, and the data logger-derived percentage of time in the cluster zone between 15°C and 35°C from veraison to harvest 2006.

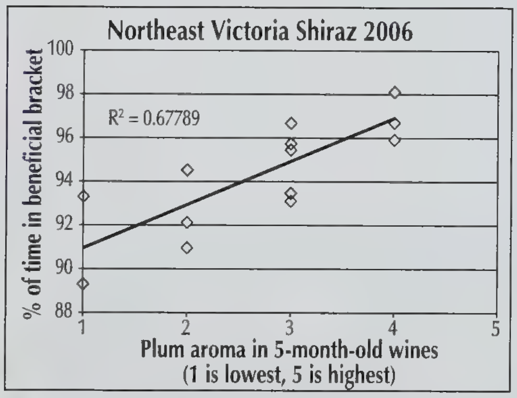


Figure 5: Plum aroma rating in 17 Northeast Victorian 5-month-old Shiraz wines, and the data logger-derived percentage of time in the cluster zone between 15°C and 35°C from veraison to harvest 2006.

Increasing time in beneficial temperature bracket

The vineyard site has a large bearing on time in the beneficial temperature bracket. If a site is on an east-facing slope, the sun reaches the fruit zone early and clusters reach 15°C more quickly compared to clusters in vineyards located on west-facing slopes or beside large trees.

Row orientation may play a role with respect to time in the beneficial bracket. In north/south rows in

november 15 & 16, 2010
embassy suites hotel
monterey, ca

sustainable ag *EXPO*
healthy farms • healthy environment • healthy communities

Join the Central Coast Vineyard Team as we explore sustainable agriculture at the 6th Annual Sustainable Ag Expo in Monterey, November 15th and 16th.

Seminars include dynamic speakers on crop-specific and general topics facing vineyards and row crops. Discussion of real-time issues pertinent to the agriculture community will give attendees relevant and applicable information.

Continuing Education credits, including laws and regulations hours, will be available for PCA, PA, CCA, and Water Quality.

Tradeshow features a diversity of companies whose services support the Three Es of Sustainability.

Exhibitor and Sponsor registration is open and available on a first-come, first-serve basis. Space is extremely limited, so early registration is strongly encouraged.

Attendee registration is open and the early-bird discount is available until October 15th.

www.sustainableagexpo.org

Organized by the Central Coast Vineyard Team
835 12th Street, Suite 204 Paso Robles, CA 93446 Tel 805.369.2288

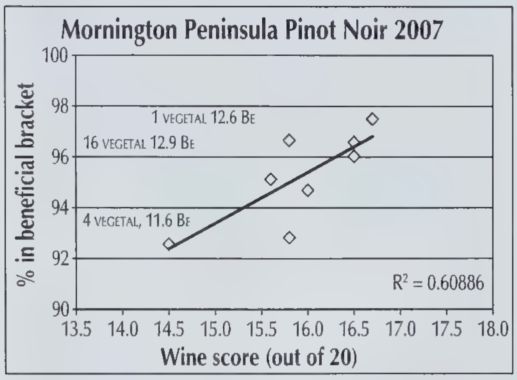


Figure 6: Wine scores of 11 Mornington Peninsula 5-month-old Pinot Noir wines, and the data logger-derived percentage of time in the cluster zone between 15°C and 26°C from veraison to harvest 2007.

warm locations there is a danger of high heat loads on the west side if foliage is not arranged to shade clusters. With appropriate foliage management the effect of row orientation can be reduced.

To examine the effect of the foliage positioning on fruit zone temperatures it is necessary to study daily curves. With most data loggers it is possible to take a laptop computer to the vineyard to access data.

To achieve a fast warm-up in the morning to 15°C (59°F), it has been shown to be beneficial to expose clusters to the morning sun side of the vine row. Heat loads can be prevented in this climate by allowing the shoots to extend past the top of the trellis post and begin to arch-over prior to trimming, ensuring an umbrella-like protection for the 11AM onset of heat. Any overhead gaps in the canopy will appear as heat spikes on the data logger curve.

Most important for a warm climate is to provide foliage over the hot afternoon side of the fruit zone. One way to achieve this on a vertical shoot position or Smart/Dyson trellis with 80 cm to 100 cm post height above the cordon is, prior to budburst, to position afternoon sun-side foliage wires 20 cm to 30 cm above the fruiting wire and the morning sun-side wires below the fruiting wire.

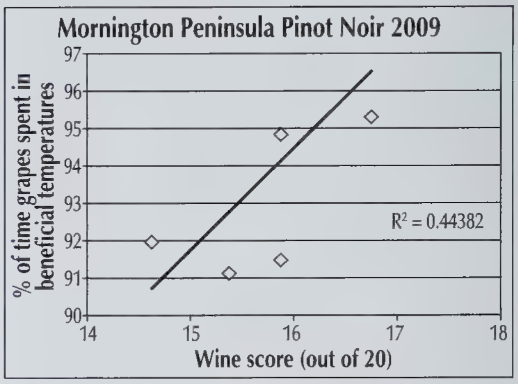


Figure 7: Wine scores of six Mornington Peninsula 5-month-old Pinot Noir wines, and the data logger-derived percentage of time of the cluster zone between 15°C and 26°C from veraison to harvest 2009.

During the growing season, when both wires on the morning sun side are lifted to mid- and top-position, they create a vertical wall of foliage (Figure 1). However, on the afternoon sun side one wire should be lifted to

GET YOUR GRAPES IN SHAPE
VIRUS TESTING

Cal-SPL

Our **17-Virus PCR** test detects all known viruses in California Vineyards **YEAR ROUND**.

Our virus eradication program ensures the elimination of viruses from your favorite varieties.

10 years of experience in grapevine research.
LOW PRICE GUARANTEED

Call today for all disease diagnostic needs!
916.655.1581
Cal-SPL Grapevine Program
7877 Pleasant Grove Rd
Elverta, CA 95626 | www.calspl.com

OGLETREE'S

METAL AND EQUIPMENT FABRICATORS
SINCE 1946

DESIGN - FABRICATION - INSTALLATION

STAINLESS STEEL - CARBON STEEL - ALUMINUM

Complete Processing Systems or Individual Components

707-963-3537

www.ogletreecorp.com

mid- or top-position to create overhanging canes.

For a Scott-Henry trellis with less height above the cordon (50 cm to 60 cm), the wire on the afternoon sun side is to be lifted from mid-position (20 to 30 cm above the fruiting wire) to the top position when approximately two-thirds of the shoots have extended past the top of the post. This will allow shorter shoots to fall out below the top wire, also creating overhanging canes.

Other trellis forms need experimentation, which can be greatly facilitated by using the diurnal curves obtained by installing temperature data loggers in each vineyard.

The diurnal curves (Figure 2) produced with a temperature data logger placed in the fruit zone of the Shiraz vineyard (see Figure 1) show the effect of foliage on temperature in the fruit zone on two warm days in Summer 2009.

In 2005, many Shiraz grapes spent a lot of ripening time in the beneficial bracket as it was a year with no excessive heat. However, very leafy vineyards had green characters assessed in their wines and low wine scores (Figure 3).

In 2006, wines that achieved high wine scores all had more than 95% in the beneficial temperature bracket (Figure 4). Other wines in this bracket with low scores were harvested at too low or too high Brix,[11] or had over-extracted, unripe seeds (documented by berry sensory assessment), according to E. Winter *et al.*[10] Wines from grapes in very cold (Vineyard 2) and very hot (Vineyards 5, 16, and 22) fruit zones did not achieve good scores.

When the scores for "sum of red fruit" were added, the same trend prevailed. The most responsive of the taste criteria was plum aroma (Figure 5), which was highly correlated to percent of time in the beneficial bracket. Raspberry aromas were high in wines from grapes grown in a cooler fruit zone.

In Pinot Noir, the relationship between percentage of hang time in the beneficial temperature bracket (15° to 26°C) and wine score was most clearly expressed in the 11 wines of 2008 ($r^2 = 0.65$, graph in Reference #13), but also occurred in 2007 (Figure 6) when early harvested grapes (wines with vegetal aromas) were omitted from the statistics. In 2009, only six of 10 wines were ready at the time of judgement (Figure 7).

Do data loggers mimic clusters?

The contrast between ambient and grape tissue temperatures in relation to the position of the clusters was observed in the 1970s and recently reviewed by M. Keller.[4] Many users of data loggers questioned the ability of data loggers positioned in the center of the fruit zone to represent all clusters.

On a hot summer day in 2010, GrapeLinks Australia monitored Pinot Noir grape temperatures (front and back of cluster) from hourly infrared thermal readings using a Therma-Twin Infrared Thermometer (Pyrosales Pty Ltd, Padstow, NSW) 2 centimeters from the cluster surface. Averages were calculated from 10 measurements (1.7 cm diameter) in different spots of the cluster surfaces.

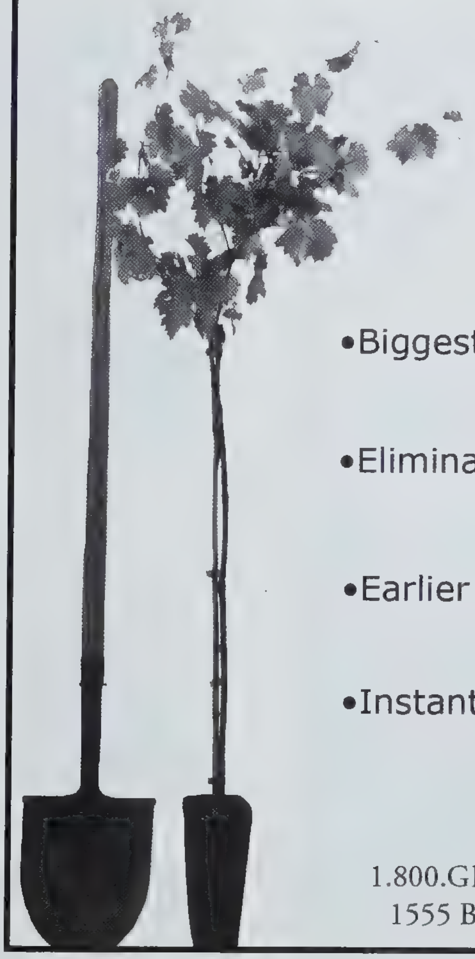
Temperatures in the fruit zone were monitored by electronic data loggers placed near selected clusters either inside the canopy, exposed to the east, leaf-shaded to the west (Figure 8), or exposed to the west (Figure 9). Ambient temperatures were measured in the shade in the tractor row.

Electronic data logger temperature readings (Figure 10) reflected the logger's position in the canopy. Logger temperatures exceeded ambient shade temperatures during sun-exposed periods of the day, in particular when loggers were west-exposed, and as expected, were lower than ambient temperatures, when protected by foliage.

Data loggers in full morning or afternoon sun were on average 7°C and 4°C warmer, respectively, than the surface of Pinot Noir grapes. Where clusters and data loggers were not

The New
UberVine

DUARTE
TREES & VINES



Amaze Your Friends!

- Biggest, Strongest, Best Vine Available
- Eliminate Most Establishment Costs
- Earlier Production
- Instant Vineyard

Duarte Trees & Vines
1.800.GRAFTED www.duartenursery.com
1555 Baldwin Road Hughson, CA 95326

in direct sunlight (inside canopy or shaded by one layer of foliage) they generally reflected the cluster temperatures within 3°C.

Leaf-protected Pinot Noir clusters had temperatures at the front similar to those at the back, but when the front was sun-exposed, the back was 10° cooler. 16

These data show that canopy management avoiding west exposure of clusters will keep grapes in the fruit zone in the beneficial bracket and that east exposure is, in this grapegrowing region, even on a hot day, not accompanied by excessive heat load.

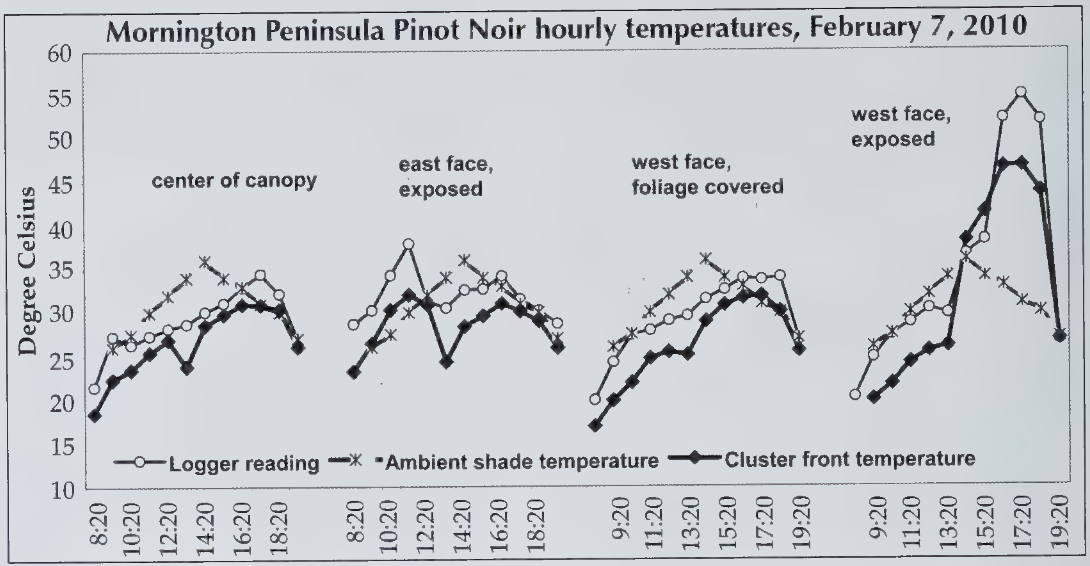


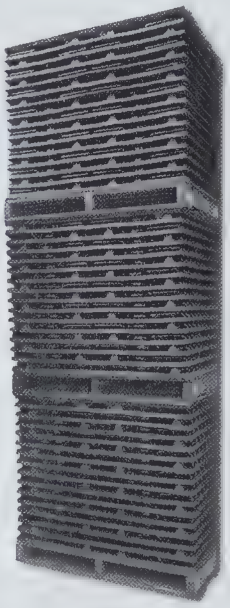
Figure 10: Hourly temperature readings on a hot summer day, by an electronic data logger placed next to Pinot Noir clusters of different canopy faces and exposures, by a thermal probe (average over ten 1.7-cm diameter spot measurements covering the cluster surface), and by a thermometer in the shade in the tractor row.

Conclusion

The user-friendly, inexpensive monitoring of grapevine fruit zone temperatures has been an invaluable tool for Australian grape growers and winemakers, in particular through the calculation of "percentage of fruit zone time in beneficial temperature bracket" as a marker for potential grape (data from references 12,13,14,15) and wine quality.

Wine quality does not rely on grape temperature management alone. However, in the face of a warming climate, understanding the influence of grape temperature and the role of vineyard management to avoid heat loads is an in-

CELLASTAC™
Compact cost effective bottle storage



Cella-Stac®, the palletised system to store and cellar bottled wine, puts sensible technology to work in your cellar. This pallet-based system lets your packers work safely and faster offering economical and best practice storage.

Cella-Stac®, is a modular system comprising layers of moulded trays with individual bottle cavities to build palletised stacks, no more bottle on bottle contact. As each tray is placed on top of the other, it is filled with bottles until the stack is built.

Cella-Stac® can offer you a long list of advantages over conventional systems such as bins or boxes.

- Faster to pack and unpack saving time & labor
- Pallet stacks can be stretch-wrapped
- Easy and safe to move around the winery
- No bottle on bottle contact
- Great inventory control, 48 bottles to a layer

SPEC TRELLISING
When Quality Counts!
(800) 237-4594
www.spectrellising.com

The Premier Silicone Rubber Bung

1000 Fourth Street Suite 640 • San Rafael, CA 94901 • 415-457-3955 • Fax 457-0304

Thinking of planting NORTON in 2011?
WELL, THINK AGAIN.

Davis Viticultural Research
Announces the limited release of
CRIMSON CABERNET (red)
and CABERNET DORÉ (white)

Two remarkable new patented grape vines – each is CABERNET SAUVIGNON crossed with NORTON.

Combining the finer features of both vines!

Visit: Davisvines.com for further information

tegral step in the long path from growing grapes to making high-quality wine. ■

Where to in the future?

Besides the continuing Pinot Noir group in the Mornington Peninsula, new demonstration sites in the King Valley and Macedon Ranges will test the effects of foliage positioning, irrigation, and under-vine management on Sauvignon Blanc, Pinot Grigio, and Chardonnay. A workshop to train grape growers in the use of fruit zone temperature data loggers has been produced by GrapeLinks and was extended to 11 grapegrowing regions of Australia, supported by funding from the Australian Government Department of Agriculture, Fisheries, and Forestry under FarmReady, part of Australia's Farming Future initiative.

Acknowledgements

The data presented herein were produced with grants from the Australian Grape and Wine Research and Development Corporation, the National Landcare Program, and the CSIRO Food Futures Flagship Program, with financial contributions of the grape growers involved, and in-kind support of the Department of Primary Industries Victoria, King Valley Vignerons Inc., and Mornington Peninsula Vignerons Association. We also acknowledge the assistance of wine judges and the services of the Bureau of Meteorology. Grape and wine chemistry studies presented elsewhere were performed by Vintessential Laboratories, Dromana, Victoria.

References

1. Bergquist, J., N. Dokoozlian, and N. Ebisuda. 2001 "Sunlight exposure and temperature effects on berry growth and compositions of Cabernet Sauvignon and Grenache in the Central San Joaquin Valley of California." *Am. J. Enol. & Vitic.* 52 (1): 1-7.

2. Cohen, S.D., J.M. Tarara, and J.A. Kennedy. 2008 "Assessing the impact of temperature on grape phenolic metabolism." *Analytica Chimica Acta* 621: 57-67.

3. Jones, G.V., M.A. White, O.R. Cooper, and K. Storchmann. 2005 "Climate change and global wine quality." *Climatic Change* 73: 319-343.

4. Keller, M. 2010 "Managing grapevines to optimise fruit development in a challenging environment, a climate change primer for viticulturists." *Aust. J. of Grape & Wine Research* 16: 56-69.

5. Pirie, A.J.G. and M.G. Mullins. 1980 "Concentration of phenolics in the skin of grape berries during fruit ripening and development." *Am. J. Enol. & Vitic.* 31: 34-36.

6. Spayd, S.E., J.M. Tarara, D.L. Mee, and J.C. Ferguson. 2002 "Separation of sunlight and temperature effects on the composition of Vitis vinifera cv Merlot berries." *Am. J. Enol. & Vitic.* 53 (3): 171-182.

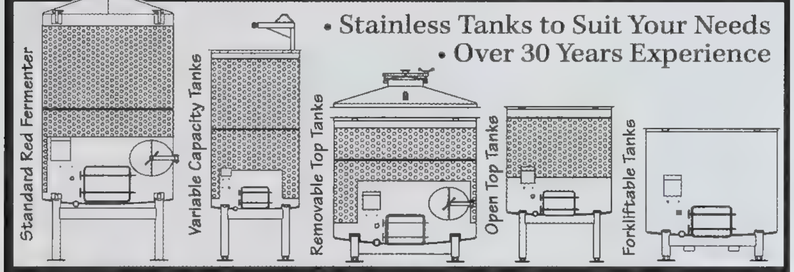
7. Webb, L., A. Watt, T. Hill, J. Whiting, F. Wigg, G. Dunn, S. Needs, and S. Barlow. 2009 "Extreme heat: Managing grapevine response based on vineyard observations from the 2009 heatwave across south eastern Australia." *Aust. Viticulture* 13 (5): 39-50.

8. Winkler, A.J. 1962 *General Viticulture.* Berkeley, CA: University of California Press.

9. White, M.A., N.S. Diffenbaugh, G.V. Jones, J.S. Pal, and F. Giorgi. 2006 "Extreme heat reduces and shifts United States premium wine production in the 21st century." PNAS 103 (30) 11217-11222.

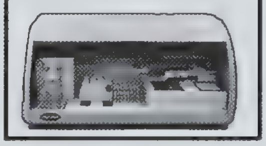
Continued on page 36

SILVER STATE STAINLESS
WWW.SILVERSTATESTAINLESS.COM
• Stainless Tanks to Suit Your Needs
• Over 30 Years Experience
12 INDUSTRIAL PKWY, SUITE E-1 • MOUNDHOUSE, NV 89706
(775) 246-1180 Fax: (775) 246-1183



AGAJANIAN VINEYARDS
Premium Winegrape Merchant and Negociant
North Coast: Rick Aldine
Northern Interior: Daniel Garcia
Central Coast: John Tufenkjian
California: Gary Agajanian
www.agajanian.com – (559) 448-0558

ENZYMATIC WINE REAGENT KITS
RS, MA, AMM, NOPA, AA, Citric, Lactic, Phenols & more
EnoLyzer™ Wine Analyzer
• 1/3 cost of a Spectrophotometer
• Stores (editable) Protocols
• Automatically calculates results
• 60-results per 30-test kit
Fast Service, Great Quality
Reagents by:
CHEMWELL™
Wine AutoAnalyzer
Unitech Scientific, LLC Ca. USA
(562) 924-5150 www.unitechscientific.com



FREE DELIVERY ON 1st ORDER
French and American Oak, Barrel Samples Available
Please preview our recently produced video, including candid comments from many of our winemaker customers at our website, click the "See our new video!" link
LEROÏ TONNELLERIE
www.leroibarrels.com info@leroibarrels.com
707-508-5006

Quantitative Descriptive Sensory Analysis

Continued from page 13

need to improve their performance for a given descriptor. It also enables the tasting notes allocated by the least sensitive panel members to be weighted appropriately.

The tasters must smell (or taste) a series of samples that contain an aroma (or flavor) and that are presented in the order of increasing concentrations. They cannot go back to a sample already presented and must, immediately after having smelled (or tasted) the sample, note their perceptions indicating whether they perceived a flavor and whether they can identify it. The detection and identification thresholds for each descriptor can thus be established.

e) Individual realization of wine profiles and group correction — This exercise allows each panel member to become familiar with the scorecard utilized for the QDSA evaluation of wines. It also makes obvious any eventual distortions or disagreements among members of a group.

☆TTB☆
LABEL APPROVALS
Low per-label costs
Gov't Liaison Negotiations or Footwork

TRADEMARK SEARCHES
As Low as $185.
Your trade names or designs are searched at the U.S. Patent Office to help establish valuable ownership or avoid costly legal liability.
Over 100 years' total staff experience handling every government liaison need for industry.

Phone or write for details.
Government Liaison Services, Inc.
200 N. Glebe Rd. #321
Arlington, Virginia 22203
Phone: (703) 524-8200 Fax: (703) 525-8451
TOLL-FREE 1-800-642-6564
Major Credit Cards Accepted
www.trademarkinfo.com

Two anonymous wines are presented to panel members; one is the control and the other is the control with the addition of a flavor and an olfactory standard. The tasters are asked to individually establish the organoleptic profile of each wine according to the QDSA principles. Together, the panel then compares the profiles established by each taster, and at the end the sample wines are revealed.

f) Triangle tests for olfactory and tasting standards — The tasters have three coded samples containing the aromas or flavors, of which two are identical. Tasters must select the one they consider different and identify the source of the difference.

Identification exercises can be utilized as evaluation exercises if they are not followed by revealing the sample. Similarly, ranking exercises can be utilized for evaluation, if they are carried out for "anonymous" standards that the tasters are asked to identify. The statistical treatment of certain exercises,[6] notably the scoring of a wine profile, also allows the group's performance to be evaluated.

When designing training programs certain rules must be followed:

- Work with homogeneous groups of panel members who have the same skill level with QDSA.
- Take into consideration the group's skill level (the training cycles already followed).
- Give preference to training sessions held in the morning, when tasters are most receptive.
- Alternate taste and olfactory tests to avoid sensory fatigue.
- Choose themes according to the specificities of the group, notably the type of wines for which they will create the QDSA profiles.

Multiple professional applications

The first application is the sensory analysis of wines taken individually. Every enologist knows the importance of this work for comparing techniques, preparing blends, evaluating competing products, and so on. The reproducibility of the QDSA is improved with the application of a testing method and the possibility of retraining when needed.

Communication with colleagues or coworkers working elsewhere increases the value of this central technical act. That was the main concern of ICV when the company began work on the topic 20 years ago: being able to communicate R+D results and various information to more than 50 enologists working for ICV and to more than 1,000 wineries working with ICV's technical and scientific support.

See Figure 2 for an illustration of a QDSA performed four months after winemaking. We can observe clear differences for certain descriptors. One of the resulting questions is whether these differences will continue, intensify, or diminish over time. Another issue would be to anticipate possible blends according to the markets, or the storage or ageing conditions.

QDSA is useful at every winemaking step. In winemaking, sulfur off-flavors have been an indicator for many years in deciding on aeration and nitrogen additions. Conduct training with the standard recipes during the year or just before harvest is, in that case, a new "tool" for the winemaker.

The mastery of evaluation by QDSA of such descriptors as mouthfeel, tannic intensity, and dryness opens the possibility of manipulating the length of maceration and extraction techniques by measuring the evolution of these sensations over time.

Contrary to what some people may believe, it does not take long to carry out a sensory profile consisting of three or four relevant descriptors, even during the busy winemaking period. Although the form may cover 15 or 16 descriptors, the winemaker is not obliged to evaluate every one of them in any situation. One can take from the method what is useful for a given objective, since during harvest time decisions must be made quickly and based on reason.

Conclusions

QDSA is a necessary tool for winemakers not only in the construction of a business strategy, but also in the ongoing evaluation of wines during the winemaking process.

Even if each person in a winery is aware of the importance of this tool, there is still a high risk that winery workers will create their own language. It would be useful if at least the basic descriptive terms (the definitions and training/evaluation recipes) were shared, along with the methods of creating the standard/descriptor pairs. Then if the selected standards were published (both definitions and recipes), everyone in the industry could integrate them in their QDSA methodology.

This direction does not eliminate one of the risks mentioned above — the multiplication of descriptors, with each person thinking theirs is more relevant than the next person's. To avoid this situation, common sense and a form of self-restraint would be beneficial. The associations of enologists, winemakers, and regional and national inter-professional groups can take into account the validation of the QDSA references and their evolution.

The International Organization of Vine and Wine (OIV) can play a major role. It has the organization, the expertise, and the necessary methods of validation to recognize the methodology, validate the basic descriptive terms (and their recipes), and enrich this basis with new terms and/or new references. ■

The authors would like to acknowledge the research involvement of Aude Berger, Justine Poudevigne, and Régis Aliot, notably for their contribution to designing a standard for mouthfeel.

References

1. Anonymous, ISO 11035 Standard, www.iso.org/iso/searchhtm?qt=11035&sort=rel&type =simple&published=true, ISO, 1994.

2. Alexis, J. and P. Alexis. 1999. *Pratique industrielle des plans d'expériences*, Association française de Normalisation (AFNOR), 166 pp.

3. Dagnelie, P. 2003. *Principes d'expérimentation: planification des expériences et analyse de leurs résultats.* Gembloux, Belgium: Les Presses agronomiques de Grembloux, 397 pp.

4. Delteil, D. 2000. "Évaluation sensorielle du profil gustatif des vins." *Revue des oenologues* 94: 21–23.

5. Goupy, J. and L. Creighton. 2006. *Introduction aux plans d'expérience.* Paris, France : Dunod/L'usine nouvelle, 336 pp.

6. Negrel, J. 2008. *Animation de jury d'experts en Analyse Descriptive Quantifiée sur des vins*, Master ICAP memoir (aromas and perfume option). Montpellier, France: Université de Montpellier 2, 50 pp.

7. Noble, A.C. et al. 1984. "Progress towards a standardized system of wine aroma terminology." *Am. J. Enol. & Vitic.* 35: 107–109.

Fermaid O®

Fermaid O® is a new yeast nutrient for alcoholic fermentation, made from 100% yeast-derived components.

Fermaid O® is a natural source of organic nitrogen recommended for low to moderate nitrogen deficiencies, and is highly suitable for organic and/or biodynamic-oriented winemaking. (Go-Ferm Protect®, Opti-Red® and Opti-White® products have OMRI approval and are also suitable for organic winemaking.)

Fermaid O® contains no inorganic nitrogen from diammonium phosphate (DAP).

Fermaid O®, a solution from nature.

LALLEMAND
www.lallemandwine.us

Monitoring fruit zone temperatures

Continued from page 33

Erika Winter takes measurements of Pinot Noir cluster temperatures with an infrared thermometer.

10. Winter, E., J. Whiting, and J. Rousseau. 2004 *Winegrape Berry Sensory Assessment in Australia*. Adelaide, AU: Winetitles.

11. Winter, E., S. Lowe, and N. Bulleid. 2007 "Bunch temperature monitoring throughout ripening and grape and wine quality in NE-VIC." *Aust. Viticulture* 11 (1): 48-53.

12. Winter, E. and S. Lowe. 2009a "Benchmarking King Valley Shiraz from 2005 to 2008." *Aust. Viticulture* 13 (1): 63-66.

13. Winter, E. and S. Lowe. 2009b "Bunchzone temperature monitoring and quality benchmarking of NE Victorian Merlot." *Aust. Viticulture* 13 (5): 28-32.

14. Winter, E., D. Braybrook, and M. Aldridge. 2009 "From vine to wine – benchmarking Pinot noir in the Mornington Peninsula." *The Australian & New Zealand Grapegrower & Winemaker* 540: 40-46.

15. Winter, E., S. Lowe, N. Bulleid, D. Braybrook, and M. Aldridge. 2010 "Happy grapes make good wine." *The Australian & New Zealand Grapegrower & Winemaker* 553: 16-21.

16. Winter, E. and B. Boysen. 2010 "Comparison of bunchzone and bunch temperatures in cool climate Pinot Noir and Chardonnay." *The Australian & New Zealand Grapegrower & Winemaker Technical Issue*, 37-41.

grapegrowing
winemaking
Visit Us Online Today.

ADI®

Customized wastewater treatment solutions for wineries

ADI treatment solutions can tackle the toughest wastewaters from wineries, producing effluents for discharge or reuse.

High-rate and low-rate anaerobic processes (for high-strength wastewater treatment), aerobic systems, and membrane bioreactors (MBRs) are all available from **ADI Systems Inc.**

ADI treatment systems can produce reuse-quality water within an easy-to-operate, small-footprint package and reduce energy consumption.

- Water reuse/reclamation
- Biogas recovery and utilization systems
- Eliminate surcharges and meet the most stringent effluent limits

www.adisystemsinc.com

Suppliers of world-class treatment technologies | USA/Canada: 1.800.561.2831 | systems@adi.ca

CASTORO BOTTLING CO. CBC FILLING YOUR NEEDS

California's First Mobile Screwcap Bottler!

- Five trucks to serve you
- Flexible scheduling
- Bottles 1,500-2,500 cases/day

Services Offered

- VELCORIN DOSING NOW AVAILABLE!
- Bottle cleaning, sparging & gravity filling
- Vacuum corking & multiple head corkers
- All types of capsules including SCREWCAP
- Pressure sensitive labeling – single or dual web
- NEW – 187ml bottling

Established

- 20 years of hands-on bottling experience
- Supported by a winery
- Experienced bottling line technicians
- Technical support for bottling prep & packaging
- Competitive prices

On the move with Mobile Bottling!

CONTACT US:

CASTORO BOTTLING CO

Phone: (805) 467-2002 Fax: (805) 467-2004

www.castorobottling.com

HUMAN RESOURCES

ONE LESS MATTER TO WORRY ABOUT

BY Milan P. Yager, President and CEO, National Association of Professional Employer Organizations, www.napeo

Today's economy is uncertain. Workplace compliance is tougher. Grape crops are unpredictable. Alcohol and Tobacco Tax and Trade Bureau regulations are ever-changing. Acquisitions threaten. Consolidation of distribution makes marketing harder.

Times are especially tough for wineries, but some successful operations are keeping their heads above water and ahead of the pack by outsourcing human resources (HR).

An effective business strategy contains innovative marketing and branding, financial savvy, technical know-how, and creativity. But a winery still needs well-compensated, trained, and talented people — a human resources program that can actually strengthen a brand.

According to the Bureau of Labor Statistics, the average human resources specialist in California earns $80,000 to $90,000 per year. However, if you cannot afford to have an HR specialist on staff, you may spend as much as one-fourth of your time dealing with paperwork and other non-revenue-generating employment tasks. One solution that many wineries have turned to is human resource outsourcing.

Outsourcing human resource specialists

When Cyndee Donato purchased Antelope Valley Winery (Lancaster, CA) in 1990, she knew that she hated doing payroll and needed to outsource the task.

"I could have picked a payroll company or hired a part-time bookkeeper," says Donato, "but I was more concerned about HR compliance and the potential for employee problems." "I wanted to offer our few full-time employees medical, dental, vision, and retirement benefits. I knew there was a solution out there that would take these administrative burdens away from me."

HR outsourcing solutions can be found through ASOs (Administrative Service Organizations) and PEOs (Professional Employer Organizations). On the surface, ASOs and PEOs appear to offer similar competencies, but fundamental differences exist between their approaches.

Single-source outsourcing providers (ASOs) enable a business to take advantage of outsourcing without transferring the entire HR organization to a service provider. A winery can outsource one or several difficult or time-consuming HR processes — such as payroll, recruiting, or benefit plan administration — while retaining control over other applications.

In an ASO arrangement, the vendor is an agent and the winery client remains fully liable and responsible. It is not unusual for a winery to maintain a business relationship with two or even a handful of single-source outsourcing providers, with each firm offering a critical service in its own area of expertise.

A PEO, on the other hand, takes care of all HR responsibilities, and many other employer responsibilities for their customers. A PEO handles every HR task — from workers' compensation and payroll to employment tax compliance, benefits, and even creating an employee handbook. A PEO also shares liabilities and legal responsibilities with its clients.

A PEO delivers its services by establishing and maintaining an employer relationship with the employees at the client's worksite, and by contractually assuming certain employer rights, responsibilities, and risk. The shared employment relationship of a PEO provides an additional number of benefits for clients compared to the agent role of an ASO.

As to cost, the services provided by a PEO and an ASO provider are different, and not comparable dollar by dollar. Payroll services from each are generally the same cost. Workers' compensation is usually less expensive with a PEO, since it is able to provide large-business coverage up to 40% lower than available to small businesses. Unemployment insurance costs are unaffected by either choice of provider.

Tonnellerie Sirugue
Exclusive U.S. agent:
Françoise Gouges
2343 33rd Street – Santa Monica CA 90405
Cellular: 310-403-8398 Fax: 310-988-2835
E-mail: sirugueusa@earthlink.net

Rue François Appert – P.B. 95
21703 Nuits Saint Georges
France

Natural Air-drying
French Oak

Your complete vineyard trellis supplier

posts • stakes • grow tubes • crossarms • wireforms • wire

QUIEDAN COMPANY
15400 Meridian Rd.,
Salinas, CA 93907
(800) 408-2117
www.quiedan.com

The biggest service difference between a PEO and an ASO is the HR expertise that you get from using a PEO. The comprehensive services they deliver are built into the fees PEOs charge, whereas with an ASO you have to purchase each service separately, or retain an attorney.

The National Association of Professional Employer Organizations (NAPEO) find that a PEO client generally will not pay more to their PEO than they were paying for all of their services before using a PEO. Although the cost will generally be the same, they will receive more services than they had a la carte, or through an ASO. The economies of scale of a PEO allow more services for a comparable cost.

Buying a team of experts

"Running a business, especially in California, is complex," says Lisa Ortman of Ortman Family Vineyards (Paso Robles). "It is important to have all your legal bases covered, and a PEO does it for us cost-effectively. If you do not have the resources for your own payroll and HR staff, you should definitely consider a PEO."

Ortman explains that they started using their PEO, Your People Professionals, as soon as they were ready to hire someone other than family. Ortman has used the PEO for four years with satisfying results.

Antelope Valley Winery has been using CPE hr (PEO), for 10 years. "We needed a full-time HR person without a full-time price tag," recalls Donato, "but it was really not about price. It was more about HR expertise that I knew I could not get from any one person.

"I have always had great employees, but CPE hr has helped me through a few sticky situations, including a layoff and a termination. The PEO even traveled to the unemployment insurance hearing with me."

Employers also have HR concerns related to economic recovery. As business ramps up and wineries begin to hire again, they need to know whether they are obligated to offer jobs to laid-off employees, what hiring criteria should be used, and how to lawfully pay employees in compliance with federal and state wage and hour laws.

Another important service that a PEO provides is I-9 administration with INS regulations. A PEO can also assist winery clients by auditing current pay methods, to improve compliance with Fair Labor Standards Act regulations. This is helpful for wineries with special events for tastings, weddings, and retail operations.

As an account manager with Avitus Group (PEO based in Montana with offices in California), Widney Hawthorne has helped many winery clients with job costing to ensure that special events are profitable, and employees are paid correctly. Employees may work mainly in the retail shop where they are paid an hourly rate plus commission, but then may work a wedding, where they are only hourly, or paid a set fee for working the event.

BOUTES
TONNELLERIE DE FRANCE

L' Art et la Matière
Depuis 1880

Boutes barrels are unique barrels with a distinct character, from 125 to 600 liters, and big vats and fermenters up to 75 hectoliters.
We control and manage all the production process from forest to final product, in order to give you the best.

For more information please contact

Manny Martinez 510-799-1518 boutesusa@sbcglobal.net
Andy Gridley 707-363-7555 usaboutes@yahoo.com

www.boutes.com

Respect Tradition

"Audits are costly and time-consuming, so Avitus Group tracks pay for both the employee and winery," explains Hawthorne. "We also make sure workers are classified correctly for workers' compensation purposes as they switch roles."

As a family business open seven days per week with 24 employees, Sunstone Winery (Santa Ynez, CA) would need the specialization of three different HR people to fill the services the winery receives from their PEO partnership with Your People Professionals, owner Ashley Peters reports.

Reaping the benefits

Building a successful benefits package can never be a solo effort. It requires skill across areas such as communication, design, marketing, sales, and finance, which is why many small businesses choose to use a PEO. The average PEO client has 19 employees, and without a PEO, is not able to offer a comprehensive benefits package.

The economies of scale provided by PEOs are helpful when administering health benefits. By aggregating all of its worksite employees, a PEO can contract with providers all over the U.S., and provide more types of health benefits from which wineries can choose.

Forty percent of businesses that use PEOs upgrade their benefit packages with supplemental health-care choices, including vision and dental care, employee assistance programs, and even adoption assistance. Clients may pick and choose from the PEO's offerings.

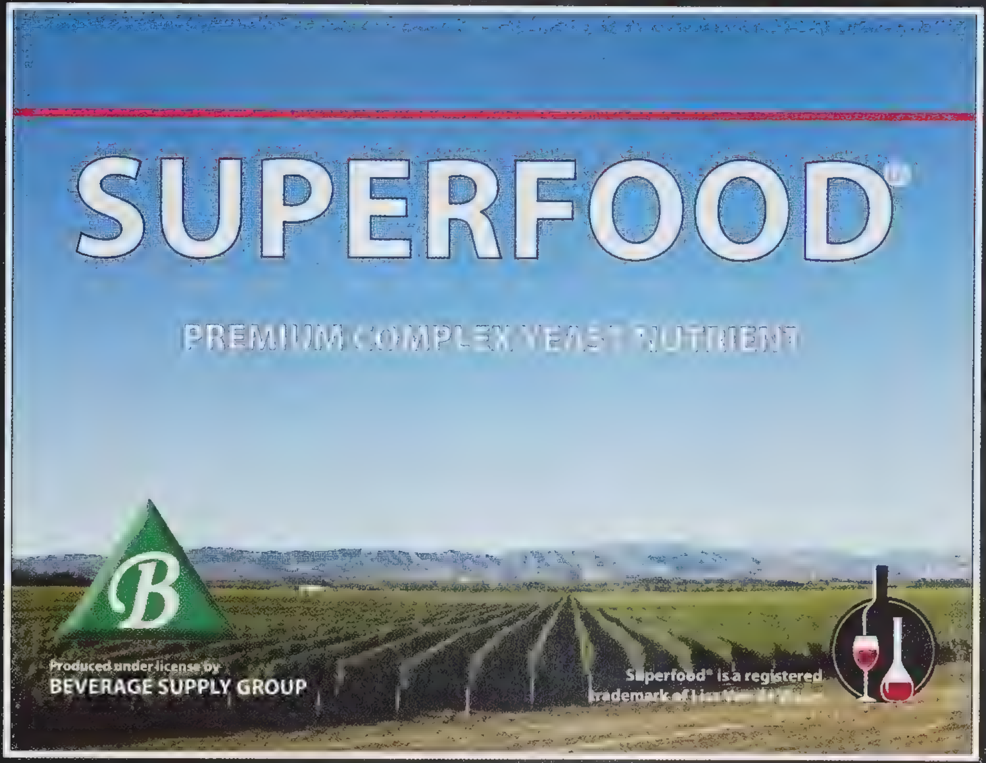
When Donato took over operations at Antelope Valley Winery, the business was only open on weekends with part-time employees. Today the winery is open full-time, and has a mix of full-time, part-time, and seasonal workers. Donato wanted some of the part-time employees to become full-time, requiring one of them to retire from another job. The glitch was to provide an entire benefits package, including a 401(k). CPE hr was able to quickly provide a satisfactory package with health, dental, vision, and retirement options.

PEOs provide the value of a single-source solution, streamlining business operations, keeping an owner focused on revenue-generating tasks, and addressing employee needs as services are added. Once established, PEOs provide wineries the flexibility to quickly add new employees to their organization, or to make adjustments to payroll and benefit coverage.

Donato is not worried about health care reform. "CPE hr will help me navigate through it, and will advise me on what to do," she says.

Peace of mind

Every business owner runs into frustrating pitfalls, especially concerning workers' compensation. Premiums for workers' compensation have risen


SUPERFOOD®
PREMIUM COMPLEX YEAST NUTRIENT
Produced under license by
BEVERAGE SUPPLY GROUP
Superfood® is a registered
trademark of

STILL THE BEST
since 1986

Now made in California
by Beverage Supply Group, using US yeast products
and available DIRECTLY from the manufacturer.
Lower production and distribution costs result in
considrable savings to the winemaker.

Beverage Supply Group
Napa/Hayward, CA~Denver, CO~Vancouver, WA
800-585-5562 www.bsgwine.com
Produced under license from inventor Lisa Van de Water

50% nationwide in the last three years — the fastest pace in a decade, according to the New York City-based Insurance Information Institute.

Due to diversity in the workforce and hospitality operations, wineries have to comply with more regulations and compliance issues than 90% of the general business population. Food and alcohol service present a different set of policies and procedures that have to be dealt with.

For more than 25 years, workers' compensation and risk management has been a central component of the total human resources solution that PEOs have been providing. A PEO initiates and integrates policies and procedures for risk management, loss management, and regulatory compliance. In addition, PEOs assist in educating employees through the development of a safety handbook.

Antelope Valley Winery decided to expand a few years ago and add a lab. Donato turned to its PEO to educate her on all the guidelines for lab operations, and to incorporate them into the winery safety manual.

Avitus Group's safety team has helped winery clients with small issues that carry big OSHA fines, such as occupational training for forklift drivers. "Without a certification card, OSHA would fine you heavily," says Hawthorne.

To keep costs down for its clients, Avitus Group automatically implements risk management strategies. On a monthly basis, they review and document the claims experience to understand the frequency and severity of claims. Results of these reviews help to implement corrective actions.

"Our PEO is like a security blanket," says Peters. "Your People Professionals is a valued partner providing insight on how to run a smoother business."

Helping hand with hiring

Nothing good comes easy, and that includes hiring and managing good employees. PEOs can help wineries find and hire qualified people. Small business owners often dread the prospect of reading mountains of resumes and conducting interviews for prospective hires. PEOs can deliver candidates quickly, and handle the paperwork for new hires. Some PEOs have entire divisions devoted to recruiting, and helping clients make the right hiring decisions.

For Sunstone Winery, staffing is truly streamlined. The PEO places the blind employment advertisement and weeds out the candidates, which allows Sunstone to focus on interviewing and selecting an employee.

Pre-employment testing is another area PEOs can manage. Without a screening process, you risk placing the wrong person in the job, leading to lost productivity and costly turnover. PEOs tailor pre-employment tests to predict loyalty to the winery employer, and success on a specific job. Background and credit checks can have a big impact.

Selecting an HR provider

Keyways Vineyard and Winery (Temecula, CA) has used several HR outsourcing arrangements. Terri Pebley Delhamer purchased Keyways in 2006, and used an a la carte approach to outsourcing with a payroll company, an individual HR consultant, and a labor attorney. After one year, Delhamer chose to combine all of these needs when she changed to a PEO.

Delhamer has been working with Avitus Group for three years as a PEO client and has some HR outsourcing advice. "You should not look for a PEO to save you money, but for much bigger reasons and added services," says Delhamer. "It is more about value of services, and peace of mind in the form of simplification with a single-service provider. I feel I am much better protected against liability and exposure with HR handbooks, safety inspections, and better employment compliance. I have a bigger company behind me dealing with delicate employee situations like sexual harassment disciplinary issues."

NAPEO recommends conducting a basic needs analysis for your winery:

- First, lay out exactly what type of HR and risk management concerns your winery has.
- Meet with all PEOs in person to ensure they have the experience to help you reach your goals.
- Find out what they have done to help similar companies your size achieve success.
- Understand how the employee benefits are funded.
- Is the PEO fully insured or self-funded?
- Who is the third-party administrator (TPA), or carrier? Is their TPA or carrier authorized to do business in your state?
- How well does the PEO manage employer risk? Is there a risk management department with trained and certified risk management and HR professionals?
- Ask what kind of on-site services you will receive. While a PEO typically works outside your office, find out how often they will make trips to

Continued on page 57

SPRAY INNOVATIONS
SWIHART Sales Company - Mist Sprayers -
We offer a complete line of low volume mist blowers.
Motor Models available
Excellent for spraying: VINEYARDS, vegetables, vineyards, orchards, nurseries, Christmas trees, livestock, mosquitos, chicken houses, etc.
References available in your area
American Made
Low Maintenance High Performance
For free brochure contact:
Swihart Sales Co.
7240 County Road AA, Quinter, KS 67752
785-754-3513 or
800-864-4595
www.swihart-sales.com

Quality, Consistency, and Service.
Ken Deis
Tonnellerie Mercier
MERCIER
tel: 707.567.5711
fax: 707.967.9645
mercierbarrels@gmail.com

WINE MICROBIOLOGY *by Robert Tracy with Bevan Skaalen*

ANTIMICROBIAL AGENTS

Wine microbe susceptibility is variable

Currently, the wine industry adds a variety of chemical antimicrobial agents during the winemaking process to effectively manage the growth of spoilage microbes in product (juice, must, wine). Wine spoilage microbes can also be physically removed by methods such as filtration, but this column will only focus on chemical additives to control spoilage populations.

Selecting the correct antimicrobial agent(s) and the appropriate concentration is complicated, because environmental conditions of wine vary, wine chemistry varies, the antimicrobial activity of chemical additives is strongly dependent on environmental and chemical conditions, and the susceptibility of wine microbes to each antimicrobial agent can be quite variable.

This column will discuss the most common antimicrobial agents currently used to manage spoilage microbes in wines (sulfur dioxide, dimethyl dicarbonate, sorbic acid, and lysozyme) and the variability of inhibitory properties associated with each preservative/sterilant.

Sulfur dioxide (SO_2)

SO_2 is an effective antimicrobial and antioxidative agent with a long history of use in winemaking. The legal limit for SO_2 in wines is currently 350 mg/L; however, wineries must disclose on their label if greater than 10 mg/L total SO_2 is present.

In an aqueous solution, SO_2 can exist in three different forms with the equilibrium in three forms, depending on pH:

molecular SO_2 ($SO_2 \cdot H_2O$);
bisulfite ion (HSO_3^-); and
sulfite ion (SO_3^{2-}).

Molecular SO_2 is the only form with antimicrobial activity and its activity increases with decreasing pH.[1,2,3]

The inhibitory action of SO_2 is manifest in its ability to react with cofactors (NAD+) required for enzymatic reactions and with adenosine triphosphate (ATP), and to disrupt disulfide bridges in proteins.

The amount of molecular SO_2 required to inhibit the growth of yeast and bacteria is dependent on many different factors including:

1. Temperature;
2. Ethanol concentration;
3. Nutrient availability;
4. Microbial population level (number of cells);
5. Microorganism type;
6. pH;
7. Sugar content; and
8. Content of carbon-containing compounds.

The antimicrobial activity of molecular SO_2 can diminish as a result of increased pH and/or getting "bound" to carbon-containing compounds (sugars, pyruvic acid, acetealdehyde, anthocyanins, and phenolic compounds).[3,4,5]

Studies on the inhibitory action of molecular SO_2, have shown that significant differences in sensitivity exist among the genera of yeast and bacteria in wine. However, most of the studies conducted have not represented true winemaking conditions (by using artificial media without ethanol, pH levels at 4.0 or above, and short-term exposure to SO_2), so determining the optimum molecular SO_2 concentration for each wine microbe is difficult.

Not only are we dealing with the multitude of factors described above, but we must determine whether the molecular SO_2 concentration is high enough to be lethal to the cells or just enough to inhibit growth, leaving cells still viable but non-culturable (VBNC). In addition, yeast cells can build up resistance to SO_2 over time.[6]

Due to the complicated nature of showing one concentration of molecular SO_2 for each wine microbe, Table I has the concentration that is lethal to wine microbe and the concentration that has been shown to control growth (but not necessarily kill each microbe). [The concentrations noted in Table I are adapted from several studies that are referenced.]

Table I: Molecular SO_2 concentrations that are lethal to, and inhibit growth of, various wine yeast and bacteria

Microorganism	Molecular SO_2 (mg/L) – growth inhibition	Molecular SO_2 (mg/L) – lethal
Yeast		
Brettanomyces spp.[7,8]	0.80	>3.0
Candida[9]	1.59	N/A
Kloeckera apiculata[9]	0.29	N/A
Pichia[9,10]	0.67	>2.0
Saccharomyces cerevisiae[11]	0.50 to 1.0	>1.0
Saccharomycodes ludwigii[8]	N/A	>3.0
Schizosaccharomyces[10]	N/A	>2.0
Zygosaccharomyces bailii[8,10,11]	1.5	2.0 to 3.0
Bacteria		
Acetobacter pasteurianus[7]	0.80	≥0.80
Lactobacillus plantarum[11]	N/A	4.0
Lactobacillus spp.[12]	>0.50	>0.80
Oenococcus oeni[12]	>0.50	>0.80

In practice and depending on the characteristics of the wine, many winemakers attempt to maintain the molecular SO_2 level between 0.5 to 1.0 mg/L to manage wine spoilage microbes in dry wines (sweet wines will likely require a molecular SO_2 concentration above 1.0 mg/L). Some winemakers do go higher than 1.0 mg/L, but it can be difficult to achieve, especially when the pH of wine is high (above 3.6). In addition, the sensory aspect of wine starts to be negatively impacted when molecular SO_2 exceeds 0.8 mg/L, as the sulfur odor becomes significantly more pronounced.

Dimethyl Dicarbonate (DMDC)

DMDC, sold under the trade name Velcorin®, is an effective antimicrobial agent against wine microbes. It can be lethal to both yeast and bacteria, although in general, higher concentrations of DMDC are required to kill bacteria.[13]

DMDC has been approved as a wine additive under the normal circumstances of bottling, in which the viable yeast count is less than or equal to 500 cells per milliliter, and at a maximum concentration of 200 ppm over the production life of each wine.

It is illegal to add DMDC to wines containing more than 500 yeast cells per milliliter and at concentrations above 200 ppm. DMDC was approved in 2006 for use in the European Union for wines having a sugar content equal to or greater than 5g/L (0.5g/100 ml).

DMDC kills microorganisms by entering the cells and inactivating some of the key enzymes required for cell function. At the molecular level, DMDC causes methoxycarbonylation of imidazole groups in enzymes essential to normal cellular metabolism, which results in cell death. It has been shown to denature enzymes (alcohol dehydrogenase and glyceraldehyde-3-phosphate dehydrogenase) that function in the fermentative pathway.[14] The target in these enzymes appears to be the imidazole ring in the amino acid histidine.

Adding DMDC to wine as a sterilizing agent has several advantages:

1. It reacts rapidly and has a broad spectrum of microbiological activity.
2. It is completely hydrolyzed to carbon dioxide and methanol. The concentrations of methanol formed from the addition of DMDC (up to 98 mg/L) are similar or less than amounts that naturally occur in many fruit and alcoholic beverages and are thought not to be of toxicological concern.[15]
3. Because DMDC can only be added to a wine that has less than or equal to 500 cells/ml of yeast, only low dosages are necessary (under 200 mg/L).
4. Its addition does not have any effect on the odor, taste, or color of wine as long as the legal dosage is added.
5. Its addition allows a reduction in the level of SO_2 added to wine.

Concerns associated with the addition of DMDC include:

1. Its low solubility in water means it must be thoroughly mixed in wine.
2. Dosing equipment is expensive.
3. Proper safety precautions must be used when handling DMDC since it can pose a safety risk.
4. It has not been approved for use in all countries.
5. While the level of methanol described above is not considered to be toxic, it is probably in the best interest of the wine industry to make sure that this level is not toxic with long-term exposure. According to the World Health Organization, methanol is irritating to the eyes, skin, and respiratory tract.[16]

Table II: Minimum lethal concentrations of DMDC required for control of various yeast and bacteria species commonly observed in winemaking

Microorganism	DMDC (mg/L) in wine containing 10% ethanol*	DMDC (mg/L) in artificial medium**
Yeast		
Brettanomyces spp.	25	N/A
Candida krusei	N/A	200
Dekkera intermedia	25	N/A
Kloeckera apiculata	N/A	30
Pichia membranefaciens	N/A	30
Rhodotorula spp.	50	30 - 200
Saccharomyces cerevisiae	25	30
Saccharomyces bayanus	25 - 50	N/A
Schizosaccharomyces pombe	25 - 50	N/A
Zygosaccharomyces	N/A	90
Bacteria		
Acetobacter pasteurianus	N/A	80
Lactobacillus brevis	N/A	200
Lactobacillus buchneri	N/A	30
Pediococcus cerevisiae	N/A	300

*Yeast were inoculated at various cell counts.
**Yeast and bacteria were inoculated at about 500 cells/ml.

The antimicrobial effectiveness of DMDC against various yeast and bacteria species commonly found in the wine industry is shown in Table II.[17] The inhibitory concentrations of DMDC shown for each microbe were tested under various environmental conditions.

Sorbic acid

Sorbic acid (2,4-hexadienoic acid) is a short-chain unsaturated fatty acid that is a fungistatic agent added to grape juice and sweet, bottled wines to prevent yeast re-fermentation, specifically by *Saccharomyces*. The inhibitory effect of sorbic acid is not uniform against yeast strains, and it does not appear to prevent spoilage from either lactic acid bacteria or acetic bacteria at concentrations used in wine.

Currently, the maximum allowable concentration in the U.S. is 300 mg/L (ppm), while the Office International de la Vigne et du Vin (OIV) has determined the maximal allowable concentration to be 200 mg/L.

The effectiveness of sorbic acid as an antimicrobial agent is affected by several factors:

1. It is not easily soluble in water, so the potassium salt of sorbic acid (potassium sorbate), which is very soluble in water, is commercially available as a powder.
2. The solubility of sorbic acid increases with increasing water temperature.
3. An increase in ethanol concentration increases the solubility of sorbic acid, while that of potassium sorbate decreases.
4. The presence of solids in solution (sucrose) decreases the solubility of both sorbic acid and potassium sorbate.
5. The antimicrobial action of sorbic acid (similar to SO_2) is the highest in its undissociated form (antimicrobial

hotfoil & top embossing
MALA Closure Systems Inc.
MALA
the fine art of closures
415-302-3123
custom design
Standard Colors
(415) 302-3123
www.mala-usa.com
mala4usa@ymail.com

activity increases as the pH of a solution decreases).

Sorbic acid acts by inhibiting the action of a variety of enzymes in a cell, including those involved in the citric acid cycles (malate dehydrogenase, isocitrate dehydrogenase, succinate dehydrogenase, and fumerase), carbohydrate metabolism (lactate dehydrogenase and enolase), and enzymes with an SH group (peroxidase and catalase).

In practice, typically concentrations of between 100 to 200 mg/L of sorbic acid are added. At these concentrations, the growth of most yeast species is inhibited; however, the level necessary for inhibition varies among yeasts, with some being highly resistant.

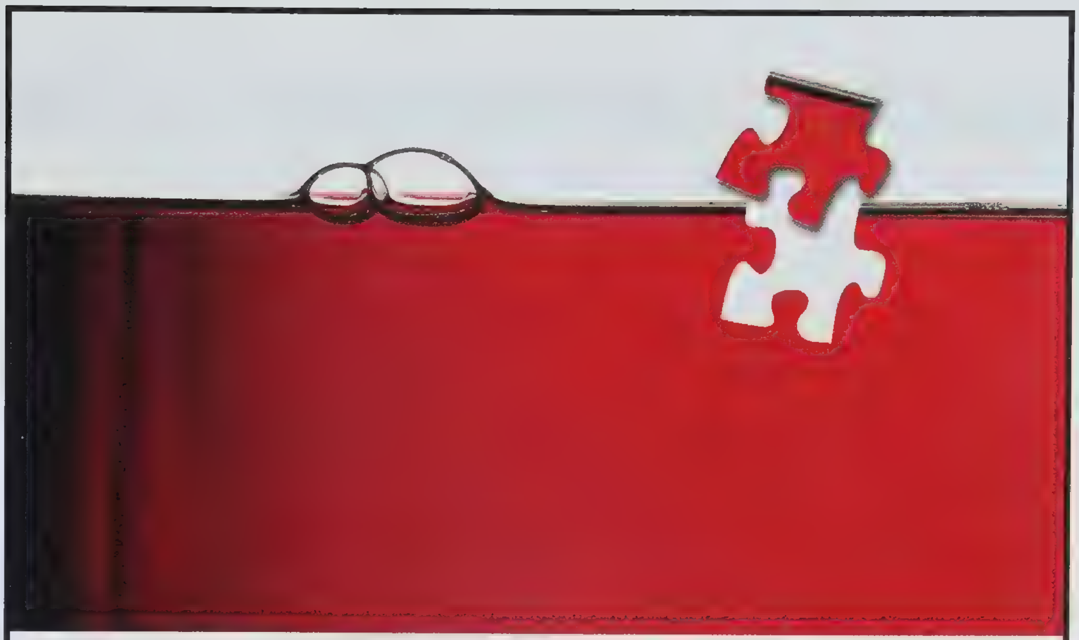
Yeasts such as *Saccharomyces cerevisiae* (25 mg/L), *Kloeckera apiculata* (156 mg/L), *Pichia anomala* (168 mg/L), *Brettanomyces* (200 mg/L), and *Candida* (100 mg/L) are usually inhibited in this concentration range.[10,18] Yeasts that are highly resistant to sorbic acid include *Zygosaccharomyces bailli* and *Schizosaccharomyces pombe*, which have been shown to be resistant to at least 672 mg/L.[10]

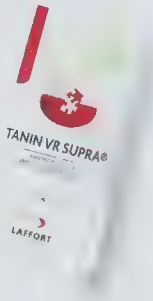
While sorbic acid has been shown to be an effective inhibitor of *Saccharomyces* growth, recent experimental data indicates that this yeast can decarboxylate sorbic acid (releasing carbon dioxide) to produce the chemical 1,3-pentadiene.[19] This chemical has a strong kerosene aroma; thus its formation in wine would be considered spoilage.

As mentioned above, acetic acid and lactic acid bacteria are not inhibited by sorbic acid. Some species of lactic acid bacteria can metabolize sorbic acid to produce 2-ethoxyhexa-3,5-diene.[20] This chemical has a geranium-like aroma, which is considered to be a wine fault.

Lysozyme

Lysozyme is an enzyme derived from egg whites and is very active against Gram-positive bacteria found in wine (such as *Lactobacillus*, *Pediococcus*, and *Oenococcus*). It has little or no activity against Gram-negative bacteria (*Acetobacter*) due to the protective properties of their outer cell membranes,[21] and has no effect on yeast or mold. Lysozyme's mode of action is to





Tannins: The essential element.

*All **LAFFORT** tannins benefit from the unique formulation **Instant Dissolving Process** (IDP) allowing tannins to be directly incorporated into the wine and insuring perfect solubility.*
*Winemakers all over the world have incorporated the use of **VR SUPRA®** as standard practice.*
***LAFFORT** now offers as a complement **VR COLOR®**, real technological breakthrough internationally patented. The exclusive OxyProtect™ process production avoids oxidation of phenolic cores during the extraction.*

TANIN VR SUPRA® *(IDP)*
Synergistic combination of ellagic and proanthocyanidic tannins, naturally purified in phenol acids, for the vinification of red wines.
- Structure improvement.
- Strong reactivity with proteins (grape tannins protection).
- Laccase activity inhibition.
- Antioxidant (color protection).
- Clarification improvement.

TANIN VR COLOR® *(IDP)*
Preparation containing extremely high concentration of active natural catechins OxyProtect™ process), naturally purified in phenol acids. To be used in combination with VR SUPRA®:
- Unique reactivity with free anthocyanins for ethanal bridge formation.
- Long lasting color stabilization.

LAFFORT
l'œnologie par nature

LAFFORT U.S.A. - 724 Broadway Street, Sonoma, CA 95476
Charlotte Gourraud - charlotte.gourraud@laffort.com
Russ Robbins - russell.robbins@laffort.com
Jillian Johnson Phoenix – jillian.phoenix@laffort.com
David Douglas – david.douglas@laffort.com
laffortusa@laffort.com (707) 343-1632 – http://us.laffort.com

attack the cell wall in Gram-positive bacteria by cleaving the peptidoglycan layer, causing breaks in the wall where water enters, which subsequently leads to cell rupture.

Both the U.S. and the OIV have approved adding lysozyme to wine up to a concentration of 500 mg/L.

Currently, there are four major applications for lysozyme in winemaking:

1. Preventive control of lactic acid bacteria growth in must and juice, particularly in musts or juices with a high pH (above 3.8) and grapes that contain rot. Application of lysozyme at this stage is beneficial because it can control the development of volatile acidity, reduce the risk of interference between alcoholic and malolactic fermentations, and inhibit the growth of spoilage lactic acid bacteria arriving on grapes. It is recommended that 200 mg/L of lysozyme be added to the must or juice.
2. Protection of wine during sluggish or stuck fermentations from volatile acidity production by lactic acid bacteria, thus encouraging the growth of yeast in the absence of SO_2. The recommended concentration to add at this stage is 250 to 400 mg/L.
3. Microbiological stabilization of wine following malolactic fermentation. The benefits at this stage include reducing the quantity of SO_2 added to wine, increasing the efficiency of micro-oxygenation, and implantation of selected malolactic bacteria that are compatible with lysozyme. Depending on the lactic acid bacteria population level, 250 to 500 mg/L is recommended.
4. Inhibition of malolactic fermentation when blending wines in different stages of the process (such as a white wine that has not gone through malolactic fermentation blended with a white wine that completed it), to keep the blended wine stable.

Lysozyme's advantages are that it is organoleptically neutral and poses no risk to human health, and its antimicrobial activity increases with increasing pH.[22,23]

Weed Badger®
The ANSWER to in-row maintenance

Multi-task with Weed Badger. Optional equipment make vineyard chores a snap. Get up to $500 off any shipping with purchase of a new machine! Offer ends 10/31/2010.

800-437-3392 • www.weedbadger.com

Its use is complicated by the following factors:

1. Different concentrations are required at distinct stages of the winemaking process.
2. Lactic acid bacteria have varying sensitivities (some species of *Lactobacillus* and *Pediococcus* can survive up to 500 mg/L).
3. It is a protein so it can contribute to proteinaceous haze when wines are stored at warmer temperatures.
4. Its activity is greater in white wines compared to red wines, due to the increased content of phenolic compounds in red wines (which react with lysozyme to decrease activity).
5. Its enzymatic activity can be neutralized by bentonite, oak chips, carbon fining agents, and high tannin levels.[23,24]

Practical concerns include:

First, laboratory trials are needed to ascertain the proper lysozyme dosage to add to wine.

Second, following its addition to production lots, microbial testing must be done to verify that the amount used effectively reduced spoilage from lactic acid bacteria populations, and to determine if any resistant species are present and at what levels.

The winemaker must keep in mind that lysozyme activity is not immediate; it generally takes anywhere from seven to 10 days to significantly reduce microbial populations.

Finally, lysozyme displays reversible protein precipitation when a low temperature is maintained (28°F/2°C) and irreversible precipitation when temperature is kept above 113°F/45°C. This is critical for conducting protein stability assessments using the heat test at temperatures above 113°F/45°C, since the presence of lysozyme will lead to a false positive. ■

Dr. Robert Tracy, with nine years of scientific research experience and seven years of winery laboratory and quality control and quality assurance experience, specializes in wine chemistry and microbiology, winery sanitation, and QA/QC. He is co-founder of BevTrac Mobile Quality Systems LLC, based in Windsor, CA (www.bevtracquality.com) providing a mobile wine laboratory and consulting services to the wine industry. Please direct inquiries to robert.tracy@bevtracquality.com or tel: 707/239-8581.

References

1. Rose, A.H. 1987 "Responses to the chemical environment." In "The Yeasts" (Second Edition), Volume 2: *Yeasts and the environment*. Academic Press (London). pp. 5-40.
2. Usseglio-Tomasset, L. 1992 "Properties and use of sulphur dioxide." *Food Addit. Contam.* 9: 399-404.
3. Fugelsang, F.C., and C.G. Edwards. 2007 *Wine Microbiology: Practical Applications and Procedures.* Springer Science+Business Media, LLC (New York).
4. Du Toit, M., and I.S. Pretorius. 2000 "Microbial spoilage and preservation of wine: using weapons from nature's own arsenal – a review." *S. Afr. J. Enol. & Vitic.* 21: 74-96.
5. Zoecklein, B.W., K.C. Fugelsang, B.H. Gump, and F.S. Nury. 1995 *Wine analysis and production.* Chapman and Hall (New York).
6. Schimz, K-L. 1980 "The effect of sulfite on the yeast *Saccharomyces cerevisiae.*" *Arch. Microbiol.* 125: 28-95.
7. du Toit, W.J., I.S. Pretorius, and A. Lonvaud-Funel. 2005 "The effect of sulfur dioxide and oxygen on the viability and culturability of a strain of Acetobacter pasteurianus and a strain of Brettanomyces bruxellensis isolated from wine." *J. Applied Microbiol.* 98: 862-871.
8. Thomas, D.S., R.R. Davenport. 1985 "Zygosaccharomyces bailii

– a profile of characteristics and spoilage activities." *Food Microbiol.* 2: 157-169.

9. Delfini, C. 1981 "La stabilizzazione microbiologica in enologia mediante l'impiego dell'anidride solforosa: nuovi concetti." *Ann. Ist. Sper. Enologia, Asti.* 12:239-250.

10. Warth, A.D. 1985 "Resistance of yeast species to benzoic and sorbic acids and to sulfur dioxide." *J. Food Prot.* 48: 564-569.

11. Beech, F.W., L.F. Burroughs, C.F. Timberlake, and G.C. Whiting. 1879 "Progres recents sur l'aspect chimique et l'action anti-microbienne de l'anyhydride sulfureux (SO_2)." *Bull. O.I.V.* 52: 1001-1022.

12. Delfini, C. and Morsiani, M.G. 1992 "Study on the resistance to sulfur dioxide of malolactic strains of *Leuconostoc oenos* and *Lactobaccillus* sp. isolated from wines." *Science des Aliments*, 12: 493-511.

13. Ough, C.S. "Dimethyl dicarbonate and diethyl dicarbonate." 1993 In "Antimicrobials in Foods" (Second Edition), Chapter 9. Marcel Dekker, Inc. (New York). pp. 343-368.

14. Porter, L.J., and C.S. Ough. 1982 "The effects of ethanol, temperature, and dimethyldicarbonate on viability of *Saccharomyces cerevisiae* Montrachet No. 522 in wine." *Am. J. Enol. & Vitic.* 33: 222-225.

15. Gahagan, R.M. 1999 "Safety and use of dimethyl dicarbonate as a cold sterilant in wine." Bureau of Alcohol, Tobacco, and Firearms.

16. World Health Organization, IPCS Internatioinal Programme on Chemical Safety, Health and Safety Guide No. 105, Methanol, United Nations Environment Programme, Geneva 1997.

17. Ough, C.S. "Dimethyl dicarbonate and diethyl dicarbonate." In: *Antimicrobials in Foods.* P.M. Davidson and A.L. Branen (Eds.), Second Edition, Chapter 9, pp. 343-368. Marcel Dekker, Inc., New York, NY.

18. Dharmadhikari, M. "Antimicrobial agents." Iowa State University. View article at the following website: http://www.extension.iastate.edu/Wine/Resources/antimicrobialagents.htm.

19. Stratford, M., A. Plumridge, and D.B. Archer. 2007 "Decarboxylation of sorbic acid by spoilage yeasts is associated with the PAD1 gene." *Applied Environ. Micro.* 73: 6534-6542.

20. Crowell, E.A., and J.F. Guymon. 1975 "Wine constituents arising from sorbic acid addition and identification of 2-ethoxyhexa-3,5-diene as a source of geranium-like off-odor." *Am. J. Enol. & Vitic.* 26: 97-102.

21. Conner, D.E. "Naturally occurring compounds." In: *Antimicrobials in Foods.* P.M. Davidson and A.L. Branen (Eds.), Second Edition, Chapter 13, pp. 441-468. Marcel Dekker, Inc., New York, NY.

22. Pitotti, A., R. Zironi, A. Dal Bo, and O. Boschelle. 1991 "Assay of lysozyme by its lytic action on Leuconostoc oenos: a suitable substrate at acidic pH." *J. of Food Biochem.* 15: 393-403

23. Delfini, C., M. Cersosimo, V. Del Prete, M. Strano, G. Gaetano, A. Pagliara, and S. Ambro. 2004 "Resistance screening assay of wine lactic acid bacteria on lysozyme: efficacy of lysozyme in unclarified grape musts." *J. of Agric. and Food Chem.* 52: 1861-1866.

24. Daeschel, M.A., T. Musafija-Jeknic, Y. Wu, D. Bizzarri, and A. Villa. 2002 "High-performance liquid chromatography analysis of lysozyme in wine." *Am. J. Enol. & Vitic.* 53: 154-157.

LETTER TO THE EDITOR

A simple solution to California water issues

BY Charles L. Barra
BARRA of Mendocino,
Mendocino County, CA

If California does not provide an adequate water supply at reasonable cost to its agricultural industry, competition from globalization will soon turn the state into a third world economy.

Additionally, most of the people who are working to find a solution to California water problems have a hard time understanding the economic impact that the lack of water at reasonable prices have on the California economy and how this directly affects working families and the state's tax base.

When agricultural land is abandoned or fruit trees and grape vines are taken out because of the lack of water, the assessed value of the property goes down, thereby reducing revenues for local services and the resulting loss of jobs for working families. Also, there is a huge decrease in the income from production which reduces billions of dollars to the state and federal government in income taxes.

We must change the direction in which we have been going and make an investment to come up with new, innovative ways to use the resources already developed to help move our economy forward.

One idea is to work with farmers and cities to develop a reservoir system that could store more water in the winter rainy season and serve as a resource during the dry summers. The sale of water and the increase in the tax base would more than repay the cost of development of these reservoirs.

Back in the 1950s, when some farmers were using wind machines and smudge pots to protect their crops from frost, there were rumblings that in Israel, they were protecting their vegetables with sprinklers and water with great success. After further research and a demonstration from an engineer in Israel, I discovered it was absolutely true and potentially the solution to our frost problems. But without a consistent water supply, this approach would not be possible.

But without a consistent water supply, this approach would not be possible.

Because water for frost protection is so efficient and clean when compared to wind machines and oil heaters, one way to make this work is to invest in fish-friendly reservoirs with winter run-off water that can be used for frost protection in the spring and then irrigate the land during the summer. In addition to being self-sufficient and sustainable, there is very little cost to maintain these reservoirs and streams.

The reservoirs also provide perfect habitat for Canadian geese, ducks, wild turkeys, fox, bob cats, and fish. For example, on a 150-acre farm, if you create reservoirs to support the needed water supply, the potential savings could be well over $1.5 million in water costs over the next 50 years.

The savings realized from building reservoirs that replenish each year should be evident to the Governor and the legislature. Fish-friendly reservoirs are filled up by winter rain, so that water is available to sell or use during the summer months. The following winter, the reservoirs fill up again at no cost, and the water can be sold year after year at a reasonable rate to consumers.

What California needs to do is make an investment in fish-friendly water storage reservoirs high in the mountains so there is gravity flow, thus cutting down on the cost of the operation. The return on investment, when taking into account of the sale of water, plus the increase in tax revenue from the agricultural products that are sold, would be in the billions of dollars, creating a self-sustaining investment in our economy and the future of our state. ■

As a Northern California grape grower for 65 years, Charlie Barra has been involved in California water issues and the challenges faced by agriculture. He served on several task forces in Mendocino County to recommend policy to efficiently deliver limited water resources among the various water districts in the area. In the 1960s, Barra was the first chairman of the Redwood Valley Water District when the district was formed to bring district water to Redwood Valley residents.

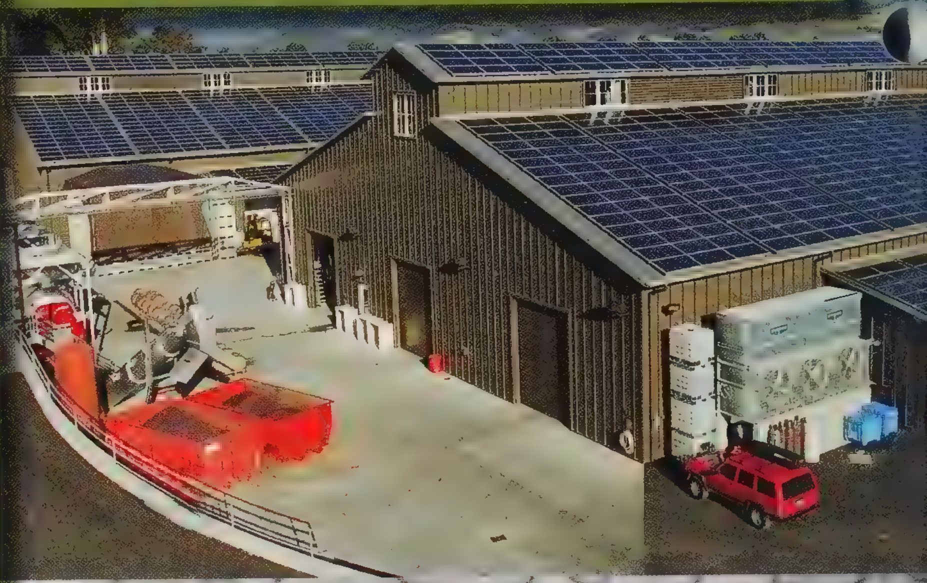
PROFESSIONAL SERVICES SHOWCASE

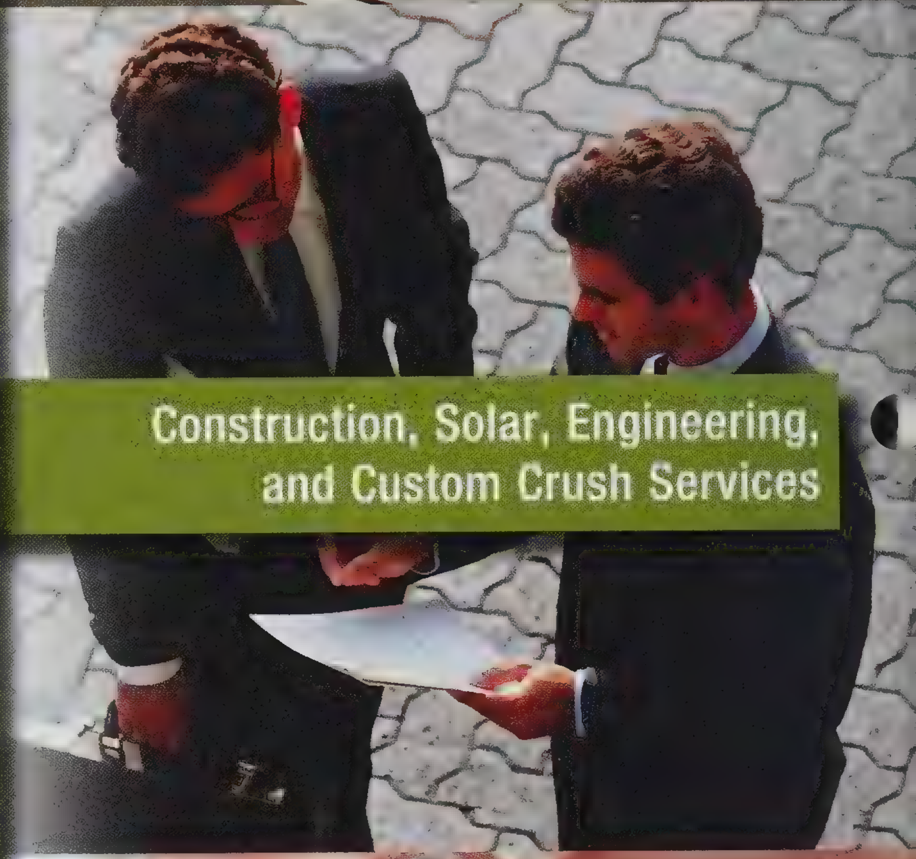
PRACTICAL WINERY & VINEYARD

SEPTEMBER/OCTOBER 2010

ADI Systems 47
American AgCredit 49
BevTrac Mobile Quality Systems ..48
Breckenridge Winery
Management Software 56
Castoro Bottling Company 47
Compliance Service of America ..52
Dal Poggetto & Company 53
Dickenson, Peatman & Fogarty...54
Enartis Vinquiry....................53
EP Aeration....................54
Government Liaison Services......52
Hall & Bartley 50
Hansel Leasing 48
Hinman & Carmichael 52
Hoyt Shepston 50
Kennedy/Jenks Consultants........51
Fred Lyon Pictures....................54
MH Architects....................53
Pacific Gas & Electric Company..50
Craig Root & Associates 49
Scott Laboratories 49
TEF Engineering 48
Turrentine Brokerage..................51
Vinotec Napa 47
Winesecrets....................56
WineWeb Enterprises 51

Real Estate, Financing, Legal, and Business Services





Construction, Solar, Engineering, and Custom Crush Services

Computers, Software, Lab Services, Wine/Grape Brokers, and more!

ADI SYSTEMS INC.

ADI Systems Inc. specializes in industrial wastewater treatment and offers many solutions for wineries, from treatment to water reuse. ADI has installed numerous systems worldwide including clients such as Anheuser-Busch, MillerCoors, Guinness, and Baileys.

ADI-MBR (Membrane Bioreactor) — A membrane bioreactor (MBR) system, based on the world's leading flat-plate MBR technology, can produce reuse-quality water within an easy-to-operate, small-footprint package. Effluent from the ADI-MBR will meet the strictest discharge limits and offer wineries a variety of disposal options including irrigation, aquifer recharge, or direct discharge. The technology is used in 20 wineries worldwide.

Anaerobic Technologies — For large wineries, ADI offers anaerobic systems that are ideally suited to treating high-strength wastewater generated at wineries and provide an efficient, economical solution to wastewater problems. Wineries can utilize the biogas generated in these systems to displace electricity or natural gas use in the winery, providing an additional economic benefit.

Contact ADI today and explore solutions to handle your winery's wastewater treatment needs and improve the overall bottom line. Ask about our ADI's new ADI-AnMBR technology.

For more information, contact:
ADI Systems Inc.
Al Cocci, Vice President
PO Box 397, 7 Pointe Sewall Rd, Wolfeboro, NH 03894
tel: 800/561-2831 (US and Canada) or 603/569-0955;
fax: 603/569-0957
e-mail: systems@adi.ca
website: www.adisystemsinc.com

PLEASE SEE ADI SYSTEMS AD, PAGE 36.

VINOTEC NAPA

Lisa Van de Water founded The Wine Lab in 1975 (but is no longer involved), Pacific Rim Oenology in New Zealand in 1992, and in 2003 – Vinotec Napa. She collaborates internationally, promoting information exchange, technology transfer, and wine microbiology research.

Vinotec Napa considers not just numbers but wine as a whole, interpreting lab results, diagnosing and solving winemaking problems, making practical suggestions to improve winery procedures.

At Vinotec Napa, management of wine microbes – good and bad – is a prime concern, including avoiding stuck ferments, *Brettanomyces*, *Lactobacillus*, *Pediococcus*, and other undesirables; Lisa is often called "The Bad Wine Lady." Combining traditional culturing and microscopy with PCR gives the most useful and cost-effective results for microbe testing and identification. Seminars on fermentation and wine microbe identification are held for wineries in several countries.

Vinotec Napa, now the U.S. wine industry distributor for Megazyme enzymatic test kits (www.megazyme.com), keeps a good stock of kits (acetic acid, ammonia, fructose/glucose, malic acid, SO_2, and others).

Vinotec Napa's fermentation nutrients are Superfood®, Startup, Vinferm, Vitamix®, Supervit®, and Leucofood, plus new Superferm, for high-risk fermentations. They are now produced and distributed by Beverage Supply Group, www.bsgwine.com, 800/585-5562.

For more information, contact:
Vinotec Napa
607 Cabot Way, Napa, CA 94559
phone: 707/953-7072
fax: 707/224-4028
e-mail: badwinelady@aol.com
International Affilates:
Chile: www.vinotec.com (en español)
New Zealand: www.pros.co.nz
South Africa: www.vinlab.com

PLEASE SEE VINOTEC ADS, PAGES 23, 57.

CASTORO BOTTLING COMPANY

Since 1989, Castoro Bottling has served wineries throughout California with a fleet of high-tech mobile bottling lines. The demand for Castoro Bottling's timely, professional, and knowledgeable service has triggered the bottling of over 60 million bottles of wine with natural cork, synthetic closures, or screwcaps.

CASTORO BOTTLING CO.
CBC
FILLING YOUR NEEDS

Castoro Bottling offers five technologically-advanced mobile bottling lines that arrive on your schedule to serve all your bottling needs. Castoro Bottling can bottle up to 2,500 cases per day, serving any size winery. Custom services include labeling and packaging consultation. Recognizing the need for wineries to offer alternative closures, Castoro Bottling has outfitted two bottling lines with **screwcap** capabilities.

"Our investment in the best equipment and the best people to run that equipment is what sets Castoro Bottling apart," says Niels Udsen. "We anticipate the needs of a winery better than any other bottler simply because I have owned and operated a successful winery for 26 years. Castoro Bottling is a partner who knows and understands your business."

Castoro Bottling Company also offers Velcorin dosing and 187ml bottling. Please call, or visit www.castorobottling.com for more information.

For more information, contact:
Castoro Bottling Company
Niels Udsen
PO Box 954, Templeton, CA 93465
tel: 805/467-2002; fax: 805/467-2004
e-mail: Niels@castorobottling.com
website: www.castorobottling.com

PLEASE SEE CASTORO BOTTLING AD, PAGE 36.

TEP ENGINEERING

TEP Engineering provides a full range of mechanical engineering services including heating, ventilation, air conditioning, refrigeration, process piping, plumbing and control systems design. Additional services include energy studies, Title 24 energy compliance calculations, and LEED work. TEP Engineering's recent work includes one LEED-certified winery, and two others pending LEED certification.

TEP Engineering provides innovative and functional mechanical designs within the framework of project requirements. Every project has a unique blend of cost, energy, environmental, aesthetics, space, and technical considerations. TEP Engineering endeavors to consider all of these factors in creating the most appropriate mechanical design.

TEP
ENGINEERING

TEP Engineering has been involved in pioneering unique and energy-efficient mechanical designs, such as hydronic radiant cooling for wineries, water source heat pumps coupled to lakes, GeoExchange heat pump systems, advanced heat recovery systems, and indirect-direct evaporative cooling systems. As energy prices have soared, TEP Engineering has found new approaches to reduce energy consumption, optimize energy use, and minimize the environmental impact of mechanical systems.

TEP Engineering's staff includes two LEED-AP certified engineers, in addition to engineers and designers with more than 60 years of HVAC and plumbing contracting experience. Please visit www.tep.net for further information.

For more information, contact:
TEP Engineering
880 Second St, Santa Rosa, CA 95404
tel: 707/538-0400 ext.1; fax: 707/538-0406
e-mail: rob@tep.net
website: www.tep.net

PLEASE SEE TEP ENGINEERING AD, PAGE 21.

HANSEL LEASING, INC.

For more than 45 years, Hansel Leasing has been a premier source for leasing. Hansel Leasing continues as a full-service leasing company; providing leases for new and used vehicles and equipment. Every lease is customized to suit the specific needs of the client.

Hansel Leasing knows the wine business. With hands-on winery experience, Hansel Leasing is the expert leasing source for the wine industry.

H HANSEL
LEASING

As a direct lender, Hansel Leasing's professionals are able to make credit decisions, create documents, and pay vendors in a timely manner. The primary goal is to make every transaction simple and convenient for wineries and their suppliers.

Hansel Leasing can provide lease financing for any winery including crushers, presses, bottling lines, stainless steel tanks, oak wine barrels, refrigeration systems, barrel racks, vineyard wind machines, sorting tables, forklifts, tractors, seeders, and sprayers. Additionally, Hansel Leasing can take the hassle out of buying or leasing any make or model of vehicle.

Contact Hansel Leasing — they lease everything!

For more information, contact:
Hansel Leasing, Inc.
Jim Taylor, Lease Manager, 707/322-4659
PO Box 3437, Santa Rosa, CA 95402
tel: 707/544-2822; fax: 707/578-8306
e-mail: jtaylor@hanselleasing.com
website: www.hanselleasing.com

PLEASE SEE HANSEL LEASING AD, PAGE 57.

BEVTRAC MOBILE QUALITY SYSTEMS LLC

BevTrac Mobile Quality Systems LLC (BevTrac) provides a mobile laboratory (a first in U.S. wine industry) that conducts state-of-the-art analytical and microbiological testing onsite (plus a free courier service in Mendocino, Napa, and Sonoma counties). Robust and comprehensive quality assurance and process optimization consulting services are the unique advantage of BevTrac's ability to bring a full service laboratory to wineries.

BevTrac
Mobile Quality Systems LLC

A wide range of consulting services BevTrac offers to wineries includes:

- Microbial troubleshooting and remediation;
- Onsite sanitation assessments, monitoring, and solutions to prevent microbial spoilage of wine;
- Quality assurance assessments and services to help clients produce high quality, safe, and pure products;
- 2,4,6-trichloroanisole (TCA) and 2,4,6-tribromoanisole (TBA) assessment and remediation;
- Process optimization consultation (such as Six Sigma and Lean Manufacturing), to eliminate defects in wine production to prevent downgrades and rework, and increase operating efficiency.
- Pre-harvest grape maturity services in collaboration with Dr. Mark Greenspan (Advanced Viticulture, www.advancedvit.com) to assess vineyard condition and fruit sensorial maturity, and collect statistically-relevant fruit samples for rapid chemical and microbiological analyses at BevTrac's mobile laboratory.

From grape maturity to finished bottle distribution, BevTrac has the expertise and technology to implement quality systems to improve finished wine.

For more information, contact:
BevTrac Mobile Quality Systems LLC
PO Box 1410, Windsor, CA 95492
tel: 800/401-8917; fax: 707/237-5125
e-mail: info@bevtracquality.com
website: www.bevtracquality.com

Craig Root & Associates — Tasting Room Consulting

Craig Root & Associates offers cost-effective opportunities to increase profits and enhance the visitor experience in your winery visitor center. An entertaining and informative visit to a visitor center stays in the consumer's mind long after expensive advertising has faded. Many of Craig's services can be accomplished with phone and email – he has created highly successful wine clubs and tasting rooms all over the U.S. without actually visiting the wineries.

Craig Root's consulting services cover several areas of visitor center performance:

1. Complete visitor center start-up (design review, business plan, income/expense projections, wine club creation, tour creation, trade relations, and complete retail room organization);
2. Appraisal of current operations (through direct consulting and/or a "mystery audit" program) to cover all phases listed in #1;
3. Wine clubs (from start-up to fine-tuning an existing program);
4. Trade relations: How to achieve better results with VIP buyers;
5. Seminars designed to improve management and staff performance (**Management seminar** presented at U.C. Davis and Cornell University, **Sales and Customer Service** for staff, and more).

The company's partial client list includes: Acacia Winery, Clos Pegase Winery, DeLoach Vineyards, Domaine Carneros, Heitz Wine Cellars, Indian Springs Winery, Fess Parker Winery, Franciscan Vineyards, Freemark Abbey Winery, Kendall-Jackson Vineyards, Kenwood Vineyards, Roederer Estate, V. Sattui Winery, St. Clement Vineyards, Stag's Leap Wine Cellars, Zaca Mesa Winery, Niebaum-Coppola Winery, and Robert Mondavi Winery.

Root teaches a class at U.C. Davis on Tasting Room Design and Management.

For more information, contact:
Craig Root & Associates
Visitor Management Resources
10 Upland Rd, St. Helena, CA 94574
tel: 707/963-7589; fax:707/963-6009
e-mail: craigaroot@comcast.net
website: www.craigroot.com

Scott Laboratories, Inc.

Scott Laboratories offers a variety of technical and processing services to wineries.

SCOTT
LABORATORIES

Scott's laboratory is the senior independent wine laboratory in North America and, since its founding in 1933, has provided analytical services to the wine and spirits industries.

In addition to wine chemistry analysis, other specialties include fermentation trouble-shooting, filterability testing, and TTB-certified analysis for export.

Scott's laboratory also provides technical support for customers who use enzymes, tannins, gelatins, and adjuvant offered in Scott Labs' portfolio of winemaking supplies. These products have been shown to be useful winemaking tools that can target specific winemaking problems, such as clarification, color stability, structure, and harsh tannins.

For more information, contact:
Scott Laboratories, Inc.
Maggie McBride, Lab Director
2220 Pine View Way, Petaluma, CA 94954
PO Box 4559, Petaluma, CA 94955
tel: 707/765-6666; fax: 707/765-6674
e-mail: info@scottlab.com
website: www.scottlab.com
Scott Laboratories, Ltd.
950 Brock Rd. South, Unit 1, Pickering,
Ontario L1W 2A1, Canada
tel: 905/839-9463; fax: 905/839-0738
website: www.scottlabsltd.com

PLEASE SEE SCOTT LABORATORIES AD, PAGE 25.

American AgCredit

American AgCredit has provided money for agriculture for more than 90 years and, in that time, has grown to be the nation's seventh largest farm credit association, by focusing on the unique needs and cycles of growers and producers.

American AgCredit®
MONEY FOR AGRICULTURE

Headquartered in the heart of California wine country, American Ag Credit has provided lending, leasing, and appraisal services for the wine industry for nearly 40 years. An active participant in the wine community, American Ag Credit has funded in excess of one billion dollars in vineyard and winery loans, and is a member and/or supporter of Sonoma County Vintners Association, Napa Valley Vintners Association, California Association of Wine Grape Growers, Wine Institute, Wine Market Council, American Vineyard Grape Exposition, and the Unified Wine & Grape Symposium.

Through good vintages and bad, American AgCredit is there to finance:

- Real estate loans;
- Vineyard development;
- Winery construction;
- Facility improvement;
- Equipment, barrel, and tank leasing;
- Operating lines of credit for crops and wine inventory.

In an industry defined by variables, American Ag Credit is a dependable constant for customized financing, flexible terms, and competitive rates for winery or vineyard needs.

For more information, contact:
American AgCredit
200 Concourse Blvd., Santa Rosa, CA 95403
tel: 707/545-1200; fax: 707/545-9400
e-mail: info@agloan.com
website: www.agloan.com

HOYT SHEPSTON, INC.

Hoyt Shepston provides the beverage industry with decades of international transportation experience for both the import and export of beverages and related beverage industry items. Established in 1850, Hoyt Shepston is one of the nation's, and California's, oldest customs house brokers and freight forwarder/OTIs, offering a full range of international transportation-related services.

Whether shipping one case or a full container by air or sea, Hoyt Shepston's staff of professionals and worldwide network of agents moves cargo with little or no effort by the client, in increments or the total transportation concept, integrating all aspects of international trade between warehouses.

Hoyt Shepston has resources and expertise to bring products to and from its various international supply points in a seamless transaction. Hoyt Shepston specialists offer all phases of documentation services, insurance, label approvals, TTB, drawback procedures, duty and quota requirements, letters of credit and more, all backed by 150-plus years of experience.

Hoyt Shepston's headquarters and warehouse are located in South San Francisco with a branch office/marine division located on the Embarcadero in San Francisco, and a worldwide web of national and international agents. Member C-TPAT.

For more information, contact:

Hoyt Shepston, Inc.
Fred Hosking
161-A Starlite St., South San Francisco, CA 94080
tel: 650/952-6930; fax: 650/952-5691
e-mail: wine@hoyt-shepston.com
website: www.hoyt-shepston.com

PLEASE SEE HOYT SHEPSTON AD, PAGE 11.

HALL & BARTLEY

Hall & Bartley is a full-service architectural firm specializing in the design and master planning of wineries. Photo shows the new tasting room for Merriam Vineyards (Healdsburg, CA).

Hall & Bartley's unique talents go beyond traditional architecture in their ability to understand and analyze the functional requirements of a modern winemaking facility. Through careful consideration and attention to client's desires, Hall & Bartley remains a leading winery architect in the U.S.

With 25 years' experience, Hall & Bartley are responsible for the design and planning of many premier California wineries including: Flowers Winery, Marimar Torres Estate, Geyser Peak Winery, Chateau St. Jean, Kendall-Jackson's La Crema facility, Atlas Peak Vineyards, Meridian Vineyards, Merriam Winery, Michel-Schlumberger, and St. Francis Winery.

Current projects include Sbragia Winery, Sierra de Montserrat Winery, Skinner Winery and expansion projects for Meridian Vineyards, Asti Winery, Quivira Winery, and Bennett Lane Winery.

Hall & Bartley's services include feasibility studies, master planning, process sizing and flow analysis, architectural design, construction document preparation, government permitting assistance, and construction administration for both new and existing winery projects.

For more information, contact:

Hall & Bartley
4701 Old Redwood Hwy, Ste 2B,
Santa Rosa, CA 95403
tel: 707/544-1642; fax: 707/544-1646
e-mails: scott@hallandbartley.com,
andy@hallandbartley.com

PLEASE SEE HALL & BARTLEY AD, PAGE 8.

PACIFIC GAS & ELECTRIC COMPANY (PG&E)

Pacific Gas and Electric Company helps wineries find energy-efficient solutions that are cost-effective and can support the sector's increasing environmental goals. To this end, the program partners with industry, trade allies, energy consultants, and others to promote integrated energy management solutions that can include energy efficiency, water efficiency, self-generation, and demand response opportunities.

Services include:

- Facility audits and system assessments;
- Subsidized tests for irrigation pumps;
- Rebates, incentives, and design assistance for new construction projects;
- Rebates, incentives, and calculation assistance for retrofit projects;
- Benchmarking tools for wineries and refrigerated warehouses;
- Emerging technology research and demonstration;
- Education through relevant industry and technology workshops and training.

For more information, contact:

Pacific Gas & Electric Company (PG&E)
Business Customer Service Center: 800/468-4743
website: www.pge.com/wineries

KENNEDY/JENKS CONSULTANTS

Kennedy/Jenks Consultants has provided consulting engineering services to the wine industry for more than 50 years. They specialize in:

- Planning, design, and construction management for improvements/expansion;
- Wastewater treatment systems;
- Land application systems;
- Water quality/supply;
- Water reuse/recycling;
- Waste minimization/source reduction;
- Storm water management;
- Sustainability and climate action plans.

Kennedy/Jenks' staff also has significant experience developing permitting and regulatory compliance strategies that enable winery projects to move forward. With a history of providing engineering services for wineries of all sizes in California and the northwest, Kennedy/Jenks can recommend cost-effective design alternatives to meet the unique challenges at every location.

Kennedy/Jenks Consultants
Engineers & Scientists

Kennedy/Jenks continues to lead workshops on the *Comprehensive Guide to Sustainable Management of Winery Water and Associated Energy* in wine-growing regions of the U.S. Developed by the company on behalf of Wine Institute and the American Vineyard Foundation, the Guide provides methods for wineries of all sizes to evaluate water-use operations; identify potential improvements; evaluate the feasibility of changes; and implement selected improvements. Wineries are encouraged to consider their operations holistically, so that water use efficiency is achieved along with energy efficiency. Applying this approach and their expertise in related disciplines, Kennedy/Jenks assists wineries with changes that are needed to progress toward sustainability goals.

For more information, contact:
Kennedy/Jenks Consultants
Bob Chrobak, Vice President
tel: 415/243-2524; fax 415/896-0999

PLEASE SEE KENNEDY/JENKS CONSULTANTS AD, PAGE 8.

WINEWEB ENTERPRISES, INC.

Founded in 1995, WineWeb® delivers innovative, cost-effective winery Internet services, including winery websites, e-commerce sales processing, point-of-sale, wine clubs, customer relationship management, e-mail campaign management, advanced content management, and e-Marketplace promotion services. WineWeb winery software services provide a complete solution to managing a winery direct sales channel.

A robust feature set effectively supports medium-size wineries, while WineWeb's value enables small wineries to have an integrated website, e-commerce, wine club, point-of-sale, customer management and e-mail campaign solution that they will never outgrow.

WineWeb®

The **winery website service** combines the winery's design and content, with a robust feature set that provides effective ways for online visitors to understand and interact with the brand. WineWeb gives the winery control over everything on its website.

The **e-commerce service** is customized to the needs of wineries and includes shopping cart, credit card processing, shipping carrier integration, fulfillment center routing, built-in compliance features, order fulfillment tools, and accounting system integration.

The **point-of-sale (POS) system** is a web-based system integrated with the winery's online products, inventory, orders, customers, and club members.

WineWeb services integrate with other winery applications, and provide tools to manage a winery's online sales channel and customer repository. There is no contract commitment period as WineWeb earns its customers' business each month.

For more information, contact:
WineWeb Enterprises, Inc.
1 Stone Ridge Rd., Santa Fe, NM 87505
tel: 888/236-0058; fax: 888/236-1439
e-mail: sales@wineweb.com
website: www.wineweb.com/services

TURRENTINE BROKERAGE

Turrentine Brokerage sells wine-grapes from all California regions, and wines in bulk from California and around the world. Turrentine Brokerage serves as a trusted and strategic advisor to deliver customized solutions for growers, wineries, and financiers based upon:

- A reputation for integrity earned over 37 years of service;
- Quick response to client needs;
- Demonstrated expertise, with the most experienced team of brokers and analysts in the industry – over $1.5 billon dollars in completed grape and wine transactions over the last ten years;
- Brokering grapes and bulk wine – Domestic and International;
- Proven long-term strategies from exclusive and superior market information and proprietary research;
- Unmatched expertise in long-term contracts.

TURRENTINE BROKERAGE

TURRENTINE
GRAPES & WINE

For more information, contact:
Steve Fredricks, President/Partner
Brian Clements, Vice President/Partner
Michael Robichaud, Broker/Senior Partner
Larry Kavanagh, Broker
Erica Moyer, Grape Broker/Partner
Bill Turrentine, Chairman/Partner
Matt Turrentine, Grape Broker
Steve Robertson, Broker/Partner
Stephens Moody, Broker
Audra Cooper, North Coast Grape Broker
7599 Redwood Blvd. Ste. 103
Novato, CA 94945
tel: 415/209-9463; fax: 415/209-0079
e-mail: info@turrentinebrokerage.com
website: www.turrentinebrokerage.com

PLEASE SEE TURRENTINE BROKERAGE AD, PAGE 11.

HINMAN & CARMICHAEL LLP

The law firm of Hinman & Carmichael LLP, established in 1991, practices exclusively in the field of alcohol beverage law and represents wine, beer, and spirits industry members at all levels, from producer and importer, to wholesaler to retailer. The firm is a leading U.S. law firm for internet alcohol marketing compliance, both direct and through the three-tier system.

HINMAN &
CARMICHAEL
LLP

The firm counsels clients on a vast array of alcohol beverage regulatory issues, and is experienced in all facets of U.S. alcohol beverage law including:

- Licensing;
- ABC and TTB hearing and accusation proceedings and regulatory defense;
- Business transactions (distribution agreements and distributor relations, marketing agreements, grape purchase and sale agreements, purchase contracts, royalty agreements, corporate formation and documents, etc);
- Trade practices and trade practice training;
- Rebates and promotions.

The firm is politically active, supporting a variety of wine and other industry organizations, including Wine Institute, Wine America, Family Winemakers of California, Specialty Wine Retailers Association, California Music and Culture Association, California Retailers Association, California Restaurant Association, Golden Gate Restaurant Association, Women for Winesense, Sonoma County Vintners, Hospices of Sonoma, ZAP, Rhone Rangers, Lodi Winegrape Commission, and the California Association of Winegrape Growers.

For more information, please contact:
Hinman & Carmichael LLP
260 California St, #1001,
San Francisco, CA 94111
tel: 415/362-1215; fax: 415/362-1494
website: www.beveragelaw.com

COMPLIANCE SERVICE OF AMERICA

Compliance Service of America (CSA) offers expert and effective compliance services for wineries, vineyard owners, and negociants. CSA specializes in crafting compliance solutions for all wine business plans.

CSA has helped hundreds of successful vintners and wine companies to:

- Start a new winery or enter into the wine business;
- Buy a winery or a brand, expand a wine business, add a new tasting room or a warehouse;
- Obtain a DSP to lower wine alcohol content and retain estate bottling claims/report the necessary distilled spirits operations;
- Set up alternating premises and operations;
- Change winery ownership for estate planning — CSA can help with reporting and recommend the best way to establish new ownership to avoid compliance issues;
- Establish or amend viticultural areas.

CSA☆

For more than 20 years, CSA has provided compliance solutions for all segments of the wine industry nationwide. The CSA website provides a FREE library of compliance wisdom and articles at www.CSA-compliance.com. From alternating proprietorships to labeling and wine bonds, these articles provide a wealth of information and are useful for everyone in the industry.

For more information, contact:
Compliance Service of America
Alex Heckathorn, Jay McPherson,
Dyana Nedra, Sara Schorske
54476 Mariah Road, Myrtle Point, OR 97458
tel: 800/400-1353 fax: 541/396-6888
e-mail: csa@csa-compliance.com
website: www.csa-compliance.com

PLEASE SEE CSA AD, PAGE 16.

GOVERNMENT LIAISON SERVICES, INC.

Government Liaison Services (GLS) was founded in Washington, D.C. (1957) to provide businesses with access to Federal Government offices and the vast amount of information available there.

Today, GLS has a large staff of experts trained in various areas, including intellectual property research, and food and beverage labeling and compliance. All associates are college graduates whose average experience exceeds 20 years.

For more than 50 years, GLS has obtained TTB (formerly BATF) label approvals, along with pursuing rulings on formula submissions, lab analysis results, advertising, and many other TTB matters for thousands of clients, including wineries, law firms, sole practitioners, Fortune 500 companies, and smaller-size businesses throughout the U.S. and the world.

GLS specializes in performing trademark, patent, and copyright search services and is the only major trademark search firm that routinely searches both a computerized database of Federal trademark records, and records from the U.S. Patent and Trademark Office's library, including all "24-hour box" records.

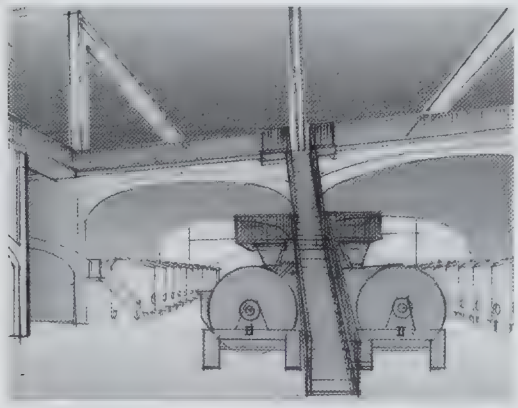
The GLS standard turnaround time for trademark searches is 48 hours. The firm's location in Arlington, VA allows first-hand consultation and guidance from U.S. Patent and Trademark Office officials.

For more information, contact:
Government Liaison Services, Inc.
200 N. Glebe Rd., #321, Arlington, VA 22203
tel: 800/642-6564, or 703/524-8200 outside U.S.
fax: 703/525-8451
website: www.trademarkinfo.com

PLEASE SEE GOVERNMENT LIAISON SERVICES AD, PAGE 34.

MH ARCHITECTS

MH Architects offers a wide range of technical experience in winery programming and design, working closely with winemakers to create the optimal facility for specific production requirements.



Whether the project involves new construction or renovation, certain objectives remain constant. Operation layout should allow the winemaker flexibility to make adjustments in processing strategy during the life of the building. When room organization is integrated with proper plumbing, mechanical, and refrigeration design, the winemaker enjoys a high level of temperature, humidity, and ventilation control. Production spaces with the ability to switch from one function to another from harvest to bottling hold a greater performance value.

MH Architects provides project management in the coordination of engineers and design-build consultants involved in a particular project. Open communication between design partners fosters a team approach. From schematic design to construction administration, building systems efficiently weave together to save construction costs, and create a highly functional winery facility.

MH
ARCHITECTS

For more information, contact:
MH Architects
Matt Hollis, AIA, LEED AP
650 5th St. Ste 504, San Francisco, CA 94107
tel: 415/977-0194; fax: 415/977-0196
e-mail: matt@matthollis.com
website: www.matthollis.com

ENARTIS VINQUIRY

Enartis Vinquiry provides analytical services, winemaking products, sensory services, and enological consulting to the wine industry. Each of Enartis Vinquiry's California locations – Sonoma County, Napa, Santa Maria, and Paso Robles – offers personalized and expert service for every customer.

In recent years, Enartis Vinquiry has added two staff winemakers to the consulting team - each with more than 20 years of experience. This has allowed Enartis Vinquiry to create the Wine Improvement Panel, which combines the knowledge and experience of staff winemakers with the benefits of using Enartis specialty winemaking products, and common wine additives. The Wine Improvement Panel, designed as a tool to help winemakers enhance wine quality, consists of three components: a brief sensory evaluation, consultation with a staff winemaker, and wine treatment with recommendations.

enartis
VINQUIRY

Enartis Vinquiry has a full-service laboratory with all of the equipment wineries need to supplement their in-house analysis. Enartis Vinquiry performs basic chemistry tests, and is able to perform specialized analyses such as plating and PCR for yeast and bacteria, TCA detection, fining trials, stability tests, the Adams Assay, smoke taint analysis, and distilled beverage testing.

For more information, contact:
Enartis Vinquiry
7795 Bell Road, Windsor, CA 95492
tel: 707/838-6312; fax: 707/838-1765
e-mail: info@vinquiry.com
website: www.vinquiry.com

DAL POGGETTO & COMPANY LLP, CPAS

Dal Poggetto & Company LLP specializes in accounting, tax, and consulting services for privately-held businesses and their owners, with a particular emphasis in the wine industry. The firm's partners have been accountants and consultants since 1975, and have worked with companies of all sizes, with annual revenues under $50,000 to those with more than $500 million in annual sales.

The firm's services include profit-improvement studies; strategic planning; financial modeling; transaction consulting for mergers, acquisitions, and divestitures; tax strategies and business planning; and traditional services, such as auditing and accounting, tax planning and preparation, and accounting systems development and consulting.

The staff at Dal Poggetto & Company LLP have extensive wine industry experience and are frequently able to make cost and tax savings recommendations to clients. They have an excellent reputation for clear communication skills, technical abilities, and responsiveness to clients.

The high quality of the firm's practice is maintained by a program of formal technical training for staff that greatly exceeds state licensure requirements and the programs of most other accounting firms. The most current technologies are employed to deliver client service in an efficient and cost-effective manner.

For excellent service at a competitive cost, provided by experienced professionals with broad consulting skills tailored to the needs of the wine industry, contact Dal Poggetto & Company LLP.

For more information, contact:
Dal Poggetto & Company LLP, CPAs
Jon P. Dal Poggetto, CPA
149 Stony Circle, First Floor,
Santa Rosa, CA 95401
tel: 707/545-3311; fax: 707/525-3999
e-mail: info@dalpoggetto.com
website: www.dalpoggetto.com

EP AERATION, INC.

Incorporated in 1991, EP Aeration offers a full range of environmentally beneficial water treatment products and services including irrigation and wastewater treatment, consulting, watershed management, and bioremediation.

EP AERATION

EP Aeration's bottom-laid, fine-bubble aeration systems have the highest oxygen transfer and circulation rates per horsepower, making them among the most efficient water treatment systems available for treating water quality issues such as high BOD, nuisance algae, odors, low dissolved oxygen, high dissolved metals, sludge accumulation and turbidity.

Performance is guaranteed for the first five years to be odor free and meet discharge requirements. Furthermore, these systems perform at a fraction of the power required by a surface aerator.

EP Aeration systems have no moving or electrical parts in the water, are chemical-free. They have been proven effective in hundreds of agricultural installations, food and beverage processing facilities, golf courses, resorts, and corporate water features throughout the U.S., Canada, and Mexico.

Free engineering and estimates available by visiting the website, telephone, or e-mail.

For more information, contact:
E P Aeration, Inc.
645 D Tank Farm Rd.
San Luis Obispo, CA 93401
tel: 800/556-9251; fax: 805/541-6149
e-mail: info@epaeration.com
website: www.epaeration.com

PLEASE SEE EP AERATION AD, PAGE 13.

DICKENSON, PEATMAN & FOGARTY

The attorneys and other professionals of Dickenson, Peatman & Fogarty (DP&F) provide a full range of legal services to wineries, grape growers, wholesalers, retailers, and various businesses that serve the wine industry, from coopers and glass manufacturers to printers and shipping companies. DP&F's wine industry clients are located in wine regions throughout the U.S. and abroad, and range from multinational corporations to small, family-owned wineries and vineyards.

Unlike many other law firms that maintain a small wine industry practice group, every DP&F attorney in every practice group works daily with wine industry clients. While any law firm can provide advice and counseling on business issues, real estate and land use, intellectual property, labor and employment, succession planning or litigation, DP&F can provide representation in these areas with the added expertise that comes from working with wine industry clients for more than 40 years.

DP&F provides representation on issues unique to the wine industry, with an entire legal team dedicated to federal and state alcohol beverage licensing and compliance, including a former California ABC District Administrator and TTB law clerk.

DICKENSON PEATMAN & FOGARTY
WORLD CLASS LAW FIRM - WINE COUNTRY LOCATIONS

Alcohol beverages are among the most highly regulated products in the U.S. When choosing legal counsel, shouldn't wineries choose counsel with experience serving the needs of the wine industry?

For more information contact:
J. Scott Gerien, Esq.
Dickenson, Peatman & Fogarty
809 Coombs St., Napa, CA 94559
tel: 707/252-7122; fax: 707/255-6876
website: www.dpf-law.com

FRED LYON PICTURES

Get the photography you want, that will tell your story best.

Fred Lyon is the wine industry's own photographer. He relentlessly prowls vineyards and wineries around the world. You've seen his pictures in all the best magazines and wine books.

For wineries and wine marketers, Lyon creates innovative conceptual images for persuasive advertising and brochures, plus web and press-use. These are high-energy images from an experienced photographer who is friendly, rapid, and reliable.

For a fresh source of available pictures, visit www.winetravelandfood.com.

For more information, contact:
Fred Lyon Pictures
3609 Buchanan St., San Francisco, CA 94123
tel: 415/922-5100; fax: 415/922-5762
e-mail: fred@fredlyon.com
website: www.fredlyon.com;
www.winetravelandfood.com

UPCOMING SHOWCASES

WINTER 2011
COMING IN JANUARY
Winery Equipment

■ ■ ■

SPRING 2011
COMING IN APRIL
Vineyard Equipment
Supplies & Services

SUBSCRIPTION ORDER FORM

☐ **YES!** I want to subscribe to PRACTICAL WINERY & VINEYARD

PLEASE PRINT

SHIP TO

DATE: ____________________

Name: ____________________ Company Name: ____________________

Title: ____________________ Address: ____________________

City/State/Zip: ____________________

Phone: ____________________ Email: ____________________

PRICE — CHECK ONE

☐ US delivery—1 year $35, 2 years $65

☐ Foreign delivery—1 year $55, 2 years $105

☐ Canada delivery—1 year $45, 2 years $88

PAYMENT METHOD — CHECK ONE: ☐ Check enclosed ☐ AMEX ☐ Visa ☐ Master Card

Card Number: ____________________ Expiration Date: ____________________

Customer Signature: ____________________ Security Code: ____________________

Primary Business:
- ☐ Winery
- ☐ Grower
- ☐ Winery & Grower
- ☐ Vyd. Mgmt.
- ☐ Distributor
- ☐ Supplier (Product or Service)
- ☐ Home Winemaker
- ☐ Other __________

Function(s):
- ☐ Winemaking
- ☐ Pres./Owner/GM
- ☐ Vyd. Mgmt.
- ☐ Cellarmaster/Prod.
- ☐ Purch./Fin.
- ☐ Tasting Room
- ☐ Sales/Mktg.

BN4

PRACTICAL
**WINERY
& VINEYARD**

BOOKSHELF ORDER FORM

58-D Paul Dr. San Rafael, CA 94903
Phone: 415/479-5819 Fax: 415/492-9325

Please send the following books:

Quantity	Title	Price	Subtotal
		Subtotal:	
		CA add sales tax (9.5%):	
		Shipping and handling:	$10.00
		TOTAL:	

SHIP TO:
Name:
Address:
City: **State:** **ZIP:**

☐ My check or money order (drawn on a U.S. bank) is enclosed.
☐ Please charge my credit card (check one): ☐ Visa ☐ MasterCard

Card Number: Expiration Date: Security Code:
Billing address for credit card:
Telephone: Customer Signature:

PWV BOOKSHELF

USE THE BOOK ORDER FORM IN THIS ISSUE

All books promptly shipped from one source.

A Taste of the World of Wine
Iland, Gago, Caillard, Dry
Comprehensive and practical guide of the history of wine, viticulture and winemaking practices, how to taste wine, and the characteristics of the major wine styles of the world. Includes maps, wine style guides, tasting clues, and over 300 photographs.
212pp—$45

A Zinfandel Odyssey
Rhoda Stewart
100 interviews with Zinfandel and producers throughout California and Mexico. Edited and published by ***PWV***. **450pp—$40**

COOL CLIMATE BOOKS

Production of Grapes and Wine in Cool Climates
David Jackson, Lincoln University, New Zealand and Danny Schuster (NZ vintner)
The definitive work in English on cool climate viticultural practices, first printed 1981. Latest updated printing, 2007. Includes major world cool climate regions, all aspects of vineyard establishment and practices, and winemaking from cool climate grapes.
193pp—$55

Monographs in Cool Climate Viticulture I: Pruning and Training
David Jackson, Lincoln University, New Zealand
New approaches to analysis and interpretation of pruning and training that apply to specific benefits and challenges of cool climates. **169pp—$30**

Monographs in Cool Climate Viticulture II: Climate
David Jackson, Lincoln University, New Zealand
Importance of climate for growing grapes and producing wine in cool temperatures, and how growers can avoid potential problems. Topics include world climates and global warming, vineyard establishment in cool climates, and wine styles. **80pp—$35**

Cooperage for Winemakers
Geoffrey Schahinger, Bryce Rankine
Revised edition of manual about construction, maintenance, and use of oak barrels.
112pp—$30

Diseases and Pests
Nicholas, Margarey, Watchel
Dept. of Primary Industries & Resources, South Australia. **106pp—$40**

Diseases, Pests, & Grape Disorders Field Guide
Magarey, MacGregor, Wachtel, & Kelly
Sturdy, laminated, pocket-size guide containing more than 350 color photos with short, easily-read descriptions of most diseases, pests, and disorders found in vineyards. **107pp—$30**

Illustrated Guide to Microbes and Sediments in Wine, Beer and Juice
Dr. Charles G. Edwards
125 color photographs showing over 30 different species of yeast, bacteria and mold commonly found in wines, as well as frequently encountered sediments.
126pp—$125

Micro Vinification
M.R. Dharmadhikari & K.L. Wilker
A practical guide for home winemakers, commercial small-scale producers, and large wineries making small, experimental lots of table wine. **120pp—$36**

Soil, Irrigation & Nutrition
P. Nicholas
Describes vineyard soil types, how to manage soil treatments, cover crops, and herbicides, optimize water quality, irrigation systems; also nutrient deficiencies and toxicities and how to manage nutritional requirements.
201pp—$55

Sunlight into Wine
R. Smart & M. Robinson
Canopy management and economics, improvement of canopy microclimates, importance of winegrape canopies, construction of trellis systems. **88pp—$40**

Vineyard Simple
Tom Powers
Provides a clear outline with diagrams and color photos on how to build and maintain your own vineyard. **118pp—$20**

Viticulture, Vol. I — Resources
NEW EDITION!
B.G. Coombe & P.R. Dry
Resources in Australia but with worldwide application. Soils, climates, grapevine classifications, grape varieties, phenology, rootstocks, planting material, vineyard site selection, and grape berry development are discussed. **211pp—$60**

Viticulture, Vol. II — Practices in Australia
B.G. Coombe & P.R. Dry
Grapevine propagation, vineyard establishment, pruning, canopy management, irrigation, grapevine nutrition, grape pests, disease, and protection. **384pp—$60**

Winegrape Berry Sensory Assessment in Australia
E. Winter, J. Whiting, J. Rousseau
How to examine berries before harvest with 20 standardized and industry-tested criteria, by judging stems, skins, pulp, and seeds. **64pp—$30**

NEW! NEW! NEW!

Wine Grape Production Guide for Eastern North America
Natural Resource, Agriculture, and Engineering Service (NRAES)
Comprehensive reference for use by novice and experienced growers, crop advisors, service providers, educators, communicators, and students. Information includes site selection and preparation, trellising and pruning, disease and pest identification, nutrient management, irrigation, pesticide application, harvesting, vineyard cost and returns, and grape sales. **300+pp—$75**

Winery Planning & Design CD, Edition-16
Bruce Zoecklein
Expanded edition is unique book on CD outlining winery planning and design: including many winery blueprints, "green building," sustainable planning, and business planning.
Over 1,500pp outline—$110

TECHNIQUES & CONCEPTS SERIES

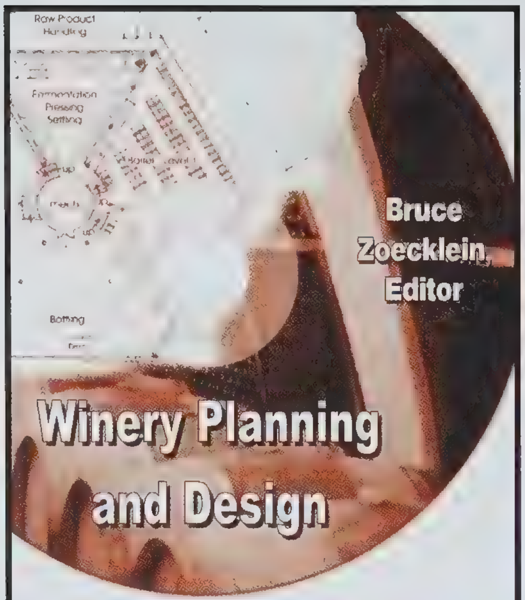
A series of lab books in an easy-to-use format for wineries.

Chemical Analysis of Grapes and Wine: Techniques and Concepts
P. Iland, N. Bruer, G. Edwards, S. Weeks, & E. Wilkes
Comprehensive theory and practice of major chemical analyses of grape and wine.
120pp—$120

Monitoring the Winemaking Process from Grapes to Wine: Techniques and Concepts
P. Iland, N. Bruer, A. Ewart, A. Markides & J. Sitters
Concepts, tests and techniques used by winemakers throughout the winemaking process for wine style and quality control. **115pp—$120**

Microbiological Analysis of Grapes and Wine: Techniques and Concepts
P. Iland, P. Grbin, M. Grinbergs, L. Schmidtke, & A. Soden
An introduction to microbiology in winemaking; serves as a resource for lab personnel and winemakers. **125pp—$120**

PW PROFESSIONAL SERVICES SHOWCASE



New 16th edition now available!

A comprehensive work on CD which covers basic essentials of planning and designing a winery.

The latest edition provides access to five hours on sustainability (Adobe Presenter) and includes architecture layouts with examples.

Topics include:

Winery Business Planning
Winery Economics
Winery Design
Winery Equipment
Winery Legal Issues
Winery Refrigeration
Winery Water Requirements
Winery Wastewater Treatment
Winery Laboratory
HACCP Planning
Sustainability

The CD is exclusively available from **PWV Bookshelf** for **$110.**

BRECKENRIDGE WINERY MANAGEMENT SOFTWARE

Breckenridge Winery Management Software will make it easy to track making and selling wine, in one integrated software package. Regardless of case production, all wineries are required and need to track the same things – it's just a matter of volume. Breckenridge software is scalable and priced based on number of concurrent users.

From grape to bottle, all cellar operations are supported to the lot and location level. Work-order preparation, trial blends, lot costing, lot tests and compositions, raw materials tracking, barrel management, vineyard tracking, and automatic updates for TTB and FDA reporting, are contained in this comprehensive software package.

From winery to customer, all sales activities are supported. POS function integrates all tasting room sales. Wine club maintenance and order preparation feed directly into a standard shipping cycle. Allocations and distributor sales are supported at any level. Integrated accounting functions complete the business software package.

Breckenridge software is used by companies with one user, and companies with up to 300 users. Whether wineries need software for a single-user, multi-user, multi-site, or remote access, Breckenridge can help achieve winery goals and support growing operations.

Breckenridge software packages start at only $5,000 (payment options available). Visit the website or call to find out what 20 years of software development can do.

FOR MORE INFORMATION, CONTACT:

Breckenridge Software Technologies, Inc.
1431 E. Long Place, Centennial, CO 80122
tel: 303/267-0024; fax: 303/798-2449
e-mail: strobeltt@msn.com
website: www.breckenridgesoftware.com

PLEASE SEE BRECKENRIDGE AD, PAGE 22.

WINESECRETS

Winesecrets provides North American wine producers with the latest separation technologies to improve efficiency, eco-performance, and wine quality. Separation technologies may be accessed as a mobile service, or as a dedicated installation as required. Winesecrets is a partner in progressive wine craft today, and is a valuable resource for tomorrow's priorities.

WineSECRETS
Technologies for a Sustainable Future

Winesecrets services include:

- STARS for tartrate stabilization and pH reduction;
- Alcohol adjustment/flavor balance;
- Volatile acidity and ethyl acetate reduction;
- Smoke and taint removal, 4-EG/4-EP reduction;
- Wine clarification by cross flow micro-filtration;
- Centrifugal clarification of juice, lees or wine;
- Must concentration.

Winesecrets uses equipment from leading global manufacturers, including:

- Electrodialysis systems by Eurodia Industries, France;
- Alcohol and taint removal systems by Memstar, Australia;
- Centrifugal clarification systems by STS, Australia;
- Cross-flow microfiltration systems by Della Toffola, Italy.

Winesecrets provides services from Napa, Sebastopol, and Paso Robles, CA; Dundee, OR; Richmond, WA; Spring Branch, TX; Ashburn, VA; Summerland, B.C., and Niagara on the Lake, Ontario, Canada.

For more information, contact:

Winesecrets
tel: 707/824-2022 or toll-free: 888/656-5553
e-mail: domingo@winesecrets.com
website: www.winesecrets.com

PLEASE SEE WINESECRETS AD, PAGE 17.

Human Resources

Continued from page 40

your winery to discuss any issues or upcoming policy changes with you and your employees.

- You also might want to confer with them for advice on a particular issue that needs an immediate solution, such as an employee dispute, so ask about their policies and response times for both emergency situations and routine questions.
- Find out how the PEO charges and invoices for their services. PEOs typically charge a monthly fee per employee or a percentage of each month's gross payroll. The cost usually encompasses amounts to be paid for employment taxes, workers' compensation, benefits, and any other employment-related expenses. Most PEOs will allow you to meet and prescreen the professionals who will work with you. This will let you gauge their approach to business and personality.

Finally, determine if the PEO is accredited by the Employment Services Assurance Corporation (ESAC), which is similar to FDIC for banks, or has obtained Certification International (CI) certification of its risk management services. Details on ESAC accreditation, CI certification, and whether a PEO has audited financials, is available on the PEO industry's trade association website at www.napeo.org. The PEO industry has approximately 700 PEOs with an average number of 19 work-site employees. ■

[As President and CEO of the National Association of Professional Employer Organizations (NAPEO) since 1995, Milan Yager is the voice of the $68 billion professional employer organization industry, serving small businesses of all types across the U.S. For the past 20 years, Yager has spoken at small business industry events and written on subjects including workers' compensation, employee benefits, risk management, management of critical human resource responsibilities, payroll and its accompanying taxes, and oversight issues for the day-to-day operation of small- to- medium-size businesses.]

H HANSEL
LEASING
Jim Taylor,
Lease Manager
2800 Corby Ave
Santa Rosa, CA
707-544-2822
If You Need It...We Lease it.
Barrels
Winery & Farm Equipment
Vehicle – Cars & Trucks

Megazyme
ENZYMATIC TEST KITS FOR WINE
Auto-Analyzer and Manual Formats
FAST, ACCURATE, RELIABLE
COMPETITIVELY PRICED
TWO-YEAR SHELF LIFE
Acetic acid, Ammonia, Glu/Fru, Malic acid, NOPA, F&TSO$_2$ (NEW!) and many others
DISTRIBUTED BY VINOTEC NAPA
CALL 707 953 7072 or email napazyme@aol.com
KITS ARE IN STOCK IN NAPA FOR IMMEDIATE SHIPMENT/PICKUP

FINE CORK PRODUCTS
You Focus On Creating Your Finest Wine...
Let Us Supply You With The Best Stoppers - ON TIME!
FREE BRANDING
No Minimums • No Plate Charge • No Setup Charge
CORKTEC
17 Middle River Drive
Stafford Springs, CT 06076
Phone: 860-851-9417
Fax: 860-749-3478
Website: www.corktec.com
E-mail: sales@corktec.com

NOVEMBER 2
COMMUNITY ALLIANCE WITH FAMILY FARMERS *PRESENTS*:
THE INTEGRATED VINEYARD: WHAT IS IN YOUR TOOLBOX?

8:30 AM - 3:30 PM – Dutton Pavilion, Shone Farm, Forestville, CA

Keynote: Sustainability in Winegrowing – Paul Dolan

Soil Building / Carbon Capture

Vineyard Floor Management – Glenn McGourty (UC Cooperative Extension, Lake & Mendocino Counties)

Cover Cropping in Vineyards – Phil Blake (Napa County NRCS)

A Grower's Perspective on Vineyard Soil Management – David Gates (Ridge Vineyards)

Reducing Water Use in Vineyards

Conversion to Low Water Use Vineyards – Alfred Cass (Cass & Associates)

Appropriate Rootstocks for Low Water Use in Vineyards – Daniel Roberts (Integrated Winegrowing)

Technology for Vineyard Water Management – Mark Greenspan (Advanced Viticulture)

A Grower's Perspective on Dry Farming

Conservation and Adaptation to a Changing World

Conservation Biocontrol: Flowering Plants for Ecological Pest Management – Rose Roberts (Farm Stewards)

Conservation Plantings: Types, Uses, Benefits – Louise Jackson (UC Davis)

Vineyard-Compatible Wildlife Corridors – Adina Merenlender (UC Coop. Extension)

A Grower's Perspective on Sustainable Farming – Lou Preston (Preston Vineyards)

Cost is $40 including lunch. For more Information and registration go to www.CAFF.org website.

CO-SPONSORS: California Climate and Agriculture Network (CalCAN), California Agricultural Water Stewardship Initiative, Sonoma County Agricultural Preservation and Open Space District, Sonoma County Winegrape Commission.

NOVEMBER 15-16
SUSTAINABLE AG EXPO
EMBASSY SUITES, MONTEREY, CA

Presented by **Central Coast Vineyard Team**, *Sponsored* by **Oro Agri**

California Water Issues - Sustainability viewpoints from various perspectives

Overview of water issues facing California agriculture – Daniel Merkley (Water Resources Government Affairs, California Farm Bureau Federation)

Conditional Ag Waiver update – Regional Water Resources Control Board

Changing Surface Water Pesticide Regulations – Patricia Matteson (CA Dept. of Pesticide Regulation)

How to develop a nutrient budget – Cliff Ohmart (Protected Harvest). Stan Grant, (Progressive Viticulture)

Social Media is not just for winemakers anymore – Philip Woodrow (Hahn Family Wines)

USDA 9-Step Process to Develop a Conservation Plan – Margy Lindquist (USDA NRCS)

What's Media Got To Do With It? Lynn Diehl (Lynn Diehl Media)

It all starts with the soil: Ecology, Diversity, Conservation

Exhibitors' Showcase

Laws & Regulations – Pesticides, Invasives, and Labor

The Dirt on New Soil Fumigant Regulations – Cindy Wire (US EPA)

Farm Labor Safety Regulations – George Daniels (Farm Employers Labor)

Invasive Species Laws/Updates – CDFA Representative

Viticulture

Varietal Influences on Vine Pathology – Kendra Baumgartner (UC Davis)

Row Crops

Trends in Sustainability Metrics: Regulatory and Marketing Opportunities

Saving Money/Reducing Impacts: Examples Beyond Agriculture

Kimpton's Sustainability Initiatives: Emily Wines, Director of Wines

For more information go to www.vineyardteam.org/events/schedule.php. For early registration discounts, go to: http://bit.ly/aA70ml.

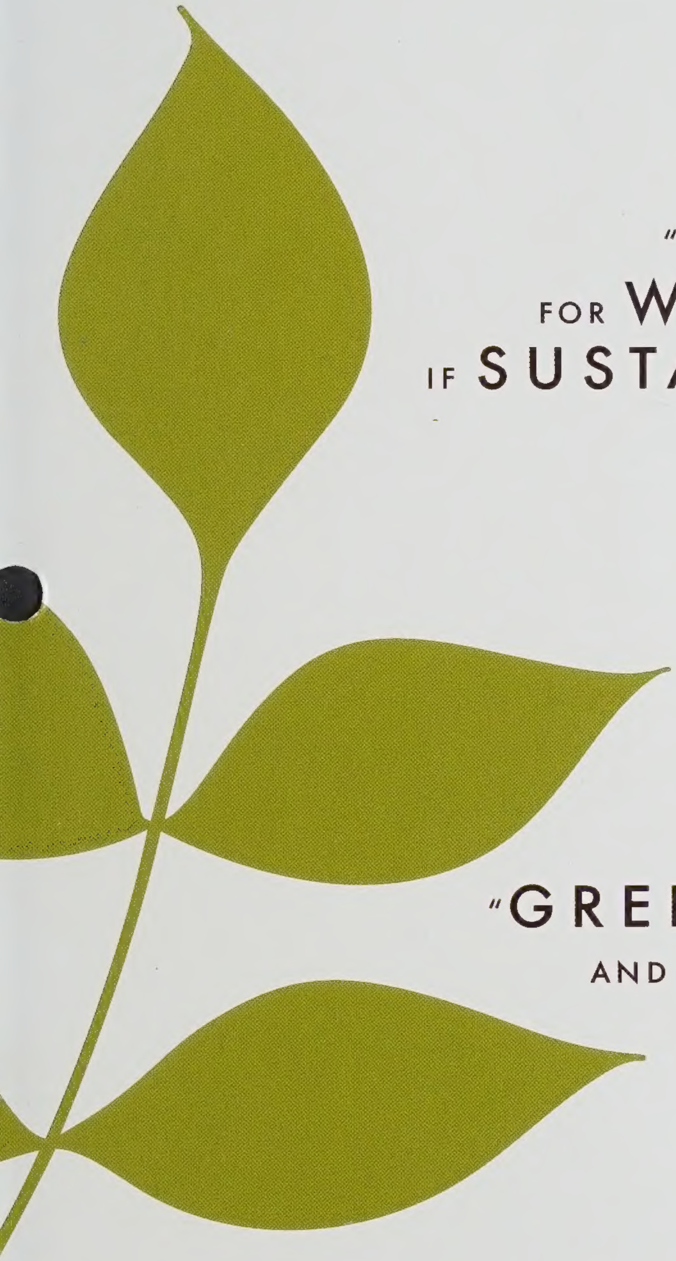
INDEX TO ADVERTISERS

ADVERTISER	PAGE	PHONE	WEBSITE/EMAIL
Aaquatools	28	800-777-2922	aaquatools.com
ADI Systems	36	800-561-2831	systems@adi.ca
Agajanian Vineyards	33	559-448-0558	agajanian.com
Begerow	19	703-673-1160	begerow.com
Beverage Supply Group	23, 39	800-585-5562	bsgwine.com
The Boswell Company	32	415-457-3955	boswellcompany.com
Breckenridge Software	22	303-267-0024	breckenridgesoftware.com
California Seed & Plant Lab	30	916-655-1581	randhawa@calspl.com
Castoro Bottling Company	36	805-467-2002	niels@castorobottling.com
Compliance Service of America	16	800-400-1353	csa-compliance.com
Corktec	57	860-851-9417	corktec.com
Davis Viticultural Research	32	618-946-3517	davisvines.com
Duarte Nursery	31	209-531-0351	duartenursery.com
EP Aeration	13	800-556-9251	epaeration.com
Government Liaison Services	34	800-642-6564	gls@trademarkinfo.com
Green Wine Summit	59		greenwinesummit.com
Gusmer Enterprises	14	559-485-2692	gusmerenterprises.com
Hall & Bartley	8	707-544-1642	hallandbartley.com
Hansel Leasing	57	707-544-2822	jtaylor@hanselleasing.com
Hoyt Shepston	11	800-675-HOYT	wine@hoyt-shepston.com
ITT Jabsco Pumps	2	978-281-0440	jabsco-winepumps.com
Kennedy/Jenks Consultants	8	415-243-2524	kennedyjenks.com
GW Kent	9	800-333-4288	gwkent.com
KLR Machines	21	707-823-2883	klrmachines.com
Knox Industries	20	415-751-6306	knoxbarrels.com
Laffort USA	43	707-343-1632	charlotte.gourraud@laffort.com
Lallemand	35	707-526-9809	lallemandwine.us
Mala Closure Systems	42	415-302-3123	mala4usa@ymail.com
Napa Fermentation Supplies	13	707-255-6372	wineyes@aol.com
Ogletree's	30	707-963-3537	speers@ogletreecorp.com
P&L Specialties	12	707-573-3141	pnlspecialties.com
Penn State University Recruitement	12		psu.jobs
PRO Refrigeration	16	800-845-7781	prochiller.com
Quiedan Company	37	800-408-2117	quiedan.com
Ramondin USA	3	707-499-2277	ramondinusa@ramondinusa.com
St. Patrick's of Texas	10	512-989-9727	stpats.com
Sanitary Stainless Welding	17	559-233-7116	jimm@sanitarystainless.com
Scott Laboratories	25	707-765-6666	scottlab.com
Silver State Stainless	33	775-246-1180	silverstatestainless.com
Spec Trellising	32	800-237-4594	spectrellising.com
Sustainable Ag Expo	29	805-369-CCVT	Sustainableagexpo.org
Swihart Sales	40	800-864-4595	swihart-sales.com
TEP Engineering	21	707-538-0400	tep.net
Tonnellerie Boutes	38	510-799-1518	boutesusa@sbcglobal.net
Tonnellerie Garonnaise	24	707-363-7555	garonnaise.com
Tonnellerie Leroi	33	707-508-5006	m.mercer@tonnellerie-leroi.com
Tonnellerie Mercier	40	707-567-5711	mercierbarrels@gmail.com
Tonnellerie Sirugue	37	310-403-8398	sirugueusa@earthlink.net
Turrentine Brokerage	11	415-209-9463	turrentinebrokerage.com
Unified Symposium	6		unifiedsymposium.org
Unitech Scientific	33	562-924-5150	unitechscientific.com
Vacuum Barrier Corp.	5	781-933-3570	vacuumbarrier.com
Vinotec Group	23, 57	707-953-7072	napazym@aol.com
Vintage Nurseries	27	800-499-9019	vintagenurseries.com
Weedbadger	44	800-437-3392	weedbadger.com
Winesecrets	17	888-656-5553	winesecrets.com
World Cooperage	60	707-255-5900	worldcooperage.com

THE GREEN WINE SUMMIT

NOVEMBER 9 & 10, 2010

HYATT VINEYARD CREEK • SANTA ROSA, CA



"THE ONE EVENT TO ATTEND THIS YEAR FOR WINE INDUSTRY LEADERS IF SUSTAINABILITY MATTERS TO YOU AND YOUR ORGANIZATION"

"A COMPREHENSIVE FORUM TO EXPLORE EVERY ASPECT OF GREEN — FROM SOIL TO MARKETPLACE"

"GREEN WILL CHANGE YOUR BUSINESS, AND THIS IS THE PLACE TO LEARN WHAT YOU NEED TO KNOW"

GREEN WINE SUMMIT CONTACTS

CO-CHAIR: LESLEY BERGLUND • LBERGLUND@MBA1991.HBS.EDU • (707) 246-6827

CO-CHAIR: MACK SCHWING • MSCHWING@SONIC.NET • (707) 570-2397

COORDINATION: WINE SYMPOSIUM GROUP • EVENTS@WINESYMPOSIUM.COM • (707) 255-9222

FOR MORE INFORMATION ON REGISTRATION AND SPONSORSHIP, PLEASE VISIT

WWW.GREENWINESUMMIT.COM

World Cooperage takes great steps to select tight grain logs grown in the thin, rocky soils of the famous forests of France and America. We pay great attention to the quality of oak we select, and take great care to conserve this precious resource. Our vertical integration allows us to apply modern sustainability practices throughout the barrel-making process. This effort assures future generations an ample supply of this gift from Mother Nature. To learn more about THE INSIDE STORY, visit **www.worldcooperage.com.**

EST 1912

World Cooperage

707.255.5900

Presented by Cooperages 1912 Napa